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3010      3020      3030      3040      3050      3060      3070      3080      3090      3100  
AAGCACCATGTTACATCATTAACTCATGCATTCAGTGTAGTTAGATCCGATAGACAATAATCTTATCTCTTGCTCGCTGAAGACTGTCTT  
TTTCGCTGGTACATCTAGTAATTAGTAGCTATAGTCACCATCAAATCTAGGCTACATCTCTGTATTAGAATAGAAACAGACCACTTCTGACAGAA

3110      3120      3130      3140      3150      3160      3170      3180      3190      3200  
TAAACTATCATCTAAATGCATTGGTTTGCCAGGATAAACATGTACAAGATATTGTGTCACTTCCCAGGGTGGAAAGGAATGAAAG  
ATTGATAGTAAGATTACGTAACCAAACGGTCCCTCATTTGTCAGTGTCTATAAACACAGTAAGGGTCCGCACCTTCCTTCTTACCTTC

3210      3220      3230      3240      3250      3260      3270      3280      3290      3300  
AAACGAGGGTGAAGGCTCTGTTCTCTAGTCGCTACTTGAAGTCTACATAGCTGGGGGGGGGACGTGTACATGGACCGGTTTCTCT  
TTTGCCTCCCACCTCCGACGACAAGGAGACATCAGCGATGACTTCAGATGTATGACCCCCCCCCCTGACAAGTGTACCCCTGCCAAAGGAGA

3310      3320      3330      3340      3350      3360      3370      3380      3390      3400  
TGTTCCTTACACTGGCCCTCTGGCAAGAACTCTCCCTCTTCCCTCCACATAGCTTGGCTGAAGGTCACTCTGACCTCTGAAAGGGCTGCAAC  
ACAAAGGAATGACCCGGAGACCGTCTTGTAGAGAGGGAGAGAGAGGGGTTCGTATAGAACCGACTTTCCAGTCGAGACTTTCCGGACCGGTTC  
TACTGTAGGGACCGGGTCACTGAACTCTGGTAGACAAAGCACTCTAGCAGGCCACTGGAGAGGACGGGGGCTCTCTCTGCAATTGCCCTGGAG  
ATGACATCCCTGGCACCACTTGTGACCCATCTGTCTTGTAGAGATCGTCCGTCACCTCTGGCCCCGAGAGAGACCGTAAACGGCACCTC

FIG. 5G

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T & TRADEMAKES  
3510      3520      3530      3540      3550      3560      3570      3580      3590      3600  
CCCTGACCACGGCAGCTCCATCTCCTTGCTATGGTTTCTGGACGCCAGGACTTCACAACCGAAATGTCTTAGGGCTAATCAGT  
GGGACTGGTGGGGTAGAGGAACGATACCAAAGACCTGGCTCGGTCCGTCTCAAGTGTGGTTAACAGAAGATCCCCGATTAGTCCA

3610      3620      3630      3640      3650      3660      3670      3680      3690      3700  
AACTCGGACGATTAAAGTGCCAGATGGACGAGAACAGTAGAGGGTTGGCACCTGATAAGGCTTAATTAACATTACAGACGGGG  
TTGAAGCCTGCTAAATTCAACGGTCTACCTGCTTGTCACTCCGCACCGTTGGACCTATTCGGGATAGAAGATTAATTGTAAGTCAGCCC

3710      3720      3730      3740      3750      3760      3770      3780      3790      3800  
CGGGGATG-CGGTGGCAACGACCATAAACAAACTTCAACTGACCAACTCACTGCAACTTGTGCCCCGAGTACATCTAGGTTCAGGGTCT  
GCCCCCTAC-GCCACCGGTTCTGTTGTTGACAGGTTCAACACACGGGCTCATGAGATCCAAGTCCCCAGA

3810      3820      3830      3840      3850      3860      3870      3880      3890      3900  
TGTCCTCATGCTCCAACTCCGGGGATTTCGGTCCCTGGCACTTCACTGGCAGGGGAAGAGAGTCTGGCACTTGCAAGGCTCTAATGAGGGCC  
ACAGAACTACGGGGTTGACGCCGCCAACAGGAACCTGAAGTCACGTCGCCGCTCTCAAGACGTGAACGTCGGAGGATTACTCCGG  
3910      3920      3930      3940      3950      3960      3970      3980      3990      4000  
ACTGGGCTCGTCTCTGATGCTTCCAGGTTGGGGCAGCAAGTGTCTAGAGCCCATTACTGCTACATTACTCCACCAAGACG  
TCACCCGGAGCAAGACCACTACGAAGGGTCCAAGGACCCCGTGTCAAGAGGTTGCTACAGACTCTGGGTAATGACCGATGTAATGAGGTGCTTGGCTC

**FIG. 5H**

2510	2520	2530	2540	2550	2560	2570	2580	2590	2600
ATCGTCCCTCCCTCTACCCAGATCTGACAGCCTCTTGCTCTTTGAGGTTGTTGACTCTCTGCAAAGAAGTTCCTTAAC	TAGCAGGGAGGAGTAGCTGTGGGAGGAACCGACCTCAAACAACTCAACAAATGAGAGACCTCTCTCAAAGGAATTG								

TAGCAGGGAGATGGGTCTAGACTGTCGGGACCGAGAACGACTCCAAACAACTCAACAAATGAGACGGTCTCTTCAAAGGAATTG  
2610 2620 2630 2640 2650 2660 2670 2680 2690 2700  
ATTCTACCCCTGTTACAAGTAATAACACCTCTAGCTTAAGAGGCCACACACCCAGGGAACACCGATAAAAAGAACAAAGCCAGAACCTCTCAGAACCTGT  
TAAGATGGACACAAGTGTCTATTATGAGAATCGATTCCTCCGGTGTGGTCCCCCTGTGGCTATTCTGTCTGGAACTCTGCGACA

2610 2620 2630 2640 2650 2660 2670 2680 2690 2700  
ACCCCTGT'TACAAGTAATAACCTCTTACGTAAGAGGCCACACCCCAGGGCACACCGATAAAAGAACAGGAGAACCTTCAGAACCGCTGT  
TGGGACAGTGTTCAATTATGTGGAGAATCGATTCTCCGGTGTGGGTCCCCTTGGCTATTCTGTCCGTCTGGAAACTCTGGCACA  
2710 2720 2730 2740 2750 2760 2770 2780 2790 2800

GCTATCCATGCGGTCTGGAAAGTATGCCCTCAAAGCACTCTCGACTATATGTTGTTTCGATTACACTCGTCGGTCCGTACGGAGCGATT  
2810            2820            2830            2840            2850            2860            2870            2880            2890            2900  
ATGAGGATGCCAACACAAACATGCCAACAGACTTCAGTATAATTATATAGATTCGCTATGTTGACATGTTTATAGTGAACTGGATT  
TACTCCATCGGGTGTGGTTTACGGGTCTAGAAGTCATATAATAATATCTAAGCATAACAACGTACAAAATATCACTTGGACCTAAA

2910 . 2920 2930 2940 2950 2960 2970 2980 2990 3000  
ACAAACCTCCTGGTTGCCACCTGCTTCTGGCACCATACTCAGGCTAGGCACGTATAAAGGAGCATGCCCTGTTCCCCCTATTTCGGTAAAGATGTTGGGAGGACCAACCGTGGACCGTGTTGACTCCGAATCCGTGCACTATTCCGGACAAGGGGAATAAAAATTCT

**FIG. 5F**

2010	2020	2030	2040	2050	2060	2070	2080	2090	2100
CTATCTCCCTCCCCAGTGCTGGATAACAAAGGTTGGCACCACATGAGCCTTAAATGACTTGGCAACCGCAGGTTTCAGCTTGAC	GATAGAGGGAAGGGTCAACGACCTATTTGTTCCAACCGTGGTACTCGGAAATTTCACCTCAAACCTCGAGTTGCGTCCAAACTACGACGTG								

2210 2220 2230 2240 2250 2260 2270 2280 2290 2300  
CCAAACAAGTGTAAAGTATTCCTATGTCGTGGAGGAGCATAGGAGCTTCACTGAGATCCTGTTAAATTGGGTGCCATAGCCAT  
GGTTTGTTCACATTCAAAAGGATACACACACTCCCTCATATCCTCCGACTAAAGTGACTCTAGGACAAATTAAACCCACGGTATCGGTTA

**FIG. 5E**



4010      4020      4030      4040      4050      4060      4070      4080      4090      4100  
CTGGGTCCAGATTGCTCTAGATGCCACTTGCGCCCCACAGTTGGGGTAGTGGGGAGTGGGTGGAAACCGGAAACCTGGTAC  
GACGCAGGTCTAACGAGACTACGCCGACGGGGGGGTCTCAGGGCCCACCCCTCACCGCACCTTGGCCTTGGTTGGACCATAG

4110      4120      4130      4140      4150      4160      4170      4180      4190      4200  
CACTGGGGGGTACCCGACCCAGGGAGTCCCACCCCTCCGGTAATGCCCGCCCATTCGCTAGCTGCTAGCTGCGGCTCTCTCTGCCCTGA  
GTCACCCCCCGCACGGGCTGCCCTCACGGGTGGGAGGGCATACTGGGGGGGGTAAGCGATCACACATCGGGGGAGAGAACGGACT

4210      4220      4230      4240      4250      4260      4270      4280      4290      4300  
GTCCTCAGGACCCAAAGAGAGTAACGCTGTTCTTACATGCCGGACCGCTAACCGGAGACTGAAAGCCAGACTGCTGCCCTCACGGGAA  
CAGGAGCTCTGGGTCTCTCATTCACACAAAGGAATCTAGGCCCTGGGAATGGGCCCTGACTTTCGGCTCTGACACACAGGGTGGCCATT

4310      4320      4330      4340      4350      4360      4370      4380      4390      4400  
CTCTGGTACCCGATTCGGGGCACCGCTCAGGGGGCTGGAGCCAGGGGGCTGGGGCTCTCCGGTCTGCCCTGGGGGGCATAC  
GGACCGACTGGCTAACGGGCTTGGGAGCTGGGGACCTGGGTCCCCGGCACGGGGGGAGGGGGAGACGGGACGGGGGGGGTATG

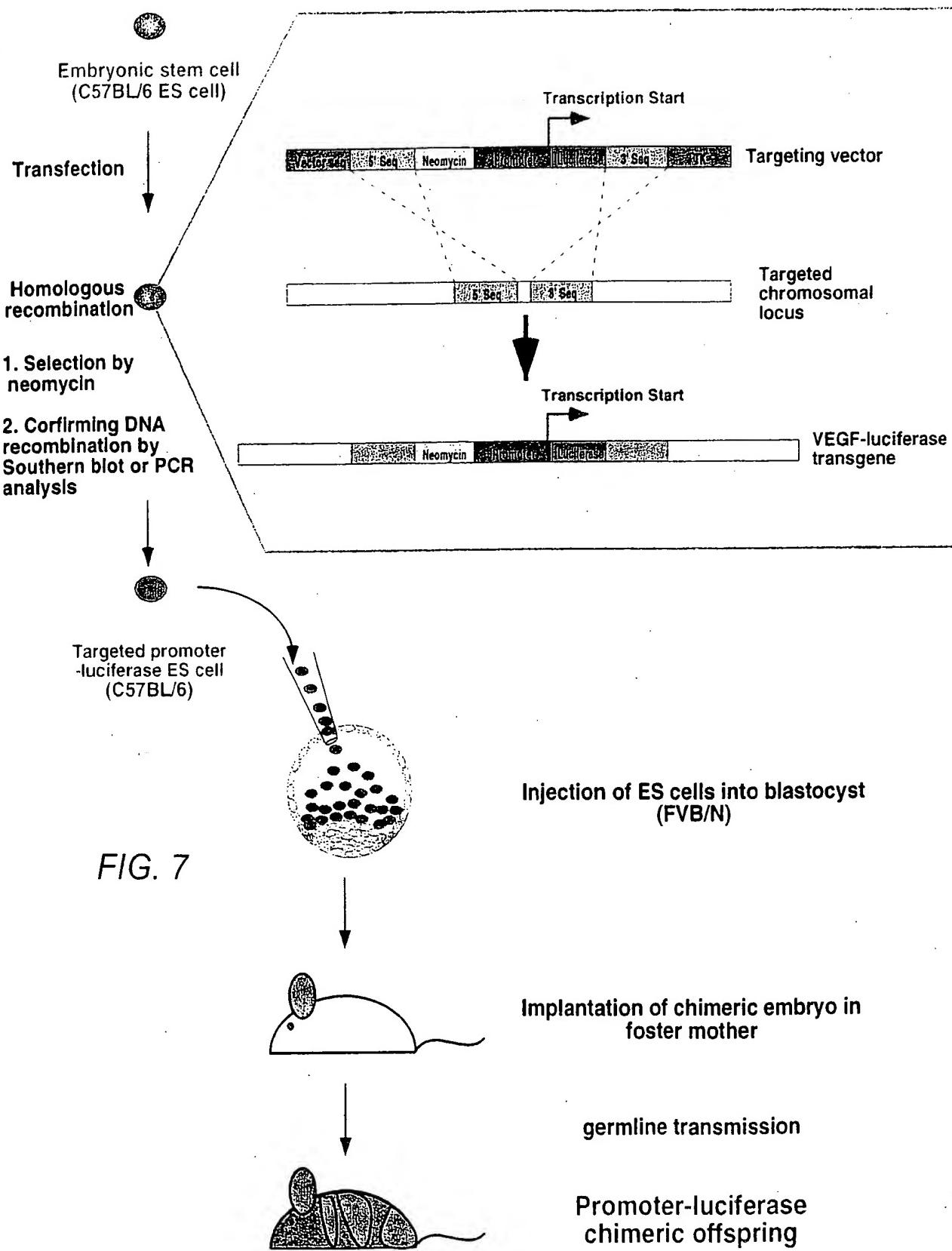
4410      4420      4430      4440      4450      4460      4470      4480  
CGCCTCTGTGACTTCTTGGGGGCCACGGAGAAGGAGCTCTGCTGAGAAGTGGCTCTGCTGCCAGGGAGCTCCAGATG  
GGGGAGACACTGAACAAACGCCCGGTCTCTGCTCTCACGACGGACTCTGACCGAGACACGGTCTGGCTCCACGCTAC

FIG. 5I



VEGF	VEGFR2	Tie2
<b>Screening primers</b>	<b>Screening primers</b>	<b>Screening primers</b>
Primers: VF1-VR1A Product size: 0.69Kb	Primers: KF1-KR1 Product size: 0.45Kb	Primers: TF3-TR1 Product size: 0.45Kb
<b>PCR program</b>	<b>PCR program</b>	<b>PCR program</b>
Hot start  94°C 40 sec 65°C 1 min 30 sec 72°C 1 min 30 sec	Hot start  94°C 40 sec 58°C 1 min 30 sec 72°C 1 min 30 sec	Hot start  94°C 40 sec 58°C 1 min 30 sec 72°C 1 min 30 sec
40 cycles	40 cycles	40 cycles
<b>Confirmation primers</b>	<b>Confirmation primers</b>	<b>Confirmation primers</b>
Primers: VF2-VR2 Product size: 0.98Kb	Primers: KF2-KR2 Product size: 0.58Kb	Primers: TF2-TR1 Product size: 0.47Kb
<b>PCR program</b>	<b>PCR program</b>	<b>PCR program</b>
Hot start  94°C 40 sec 65°C 1 min 30 sec 72°C 1 min 30 sec	Hot start  94°C 40 sec 65°C 1 min 30 sec 72°C 1 min 30 sec	Hot start  94°C 40 sec 58°C 1 min 30 sec 72°C 1 min 30 sec
40 cycles	40 cycles	40 cycles

FIG. 6



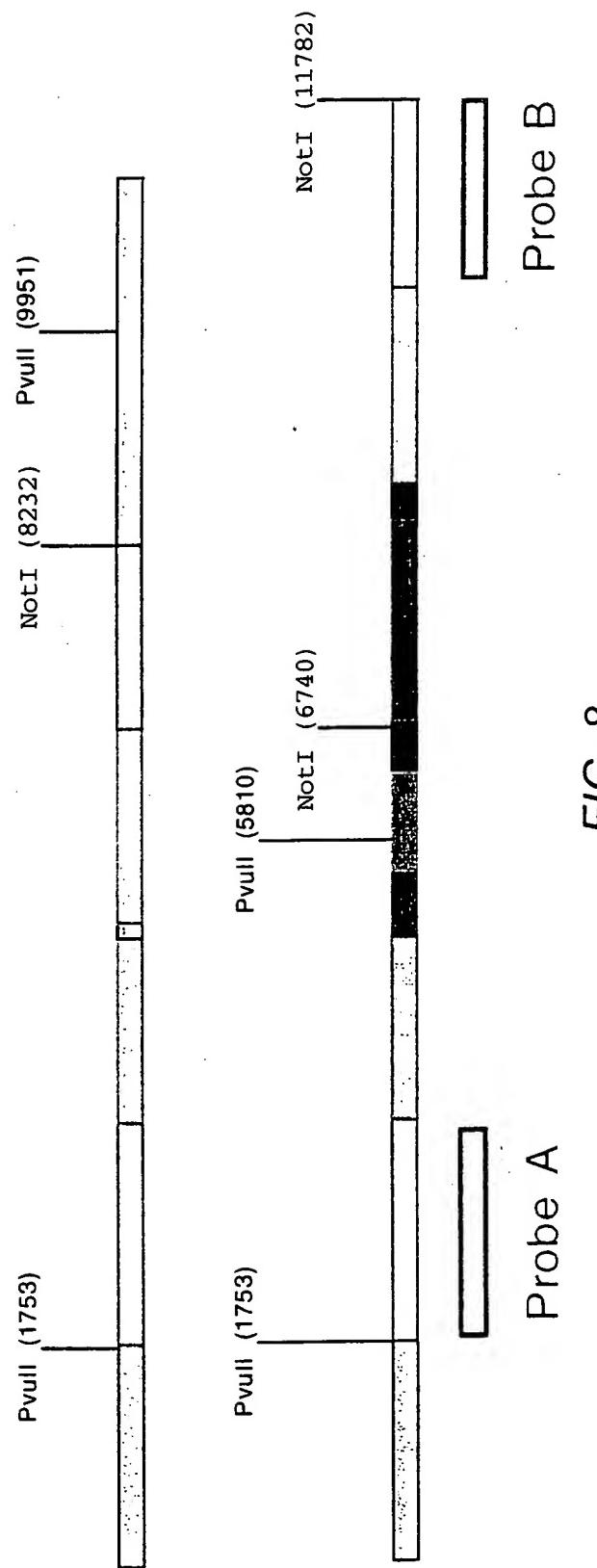
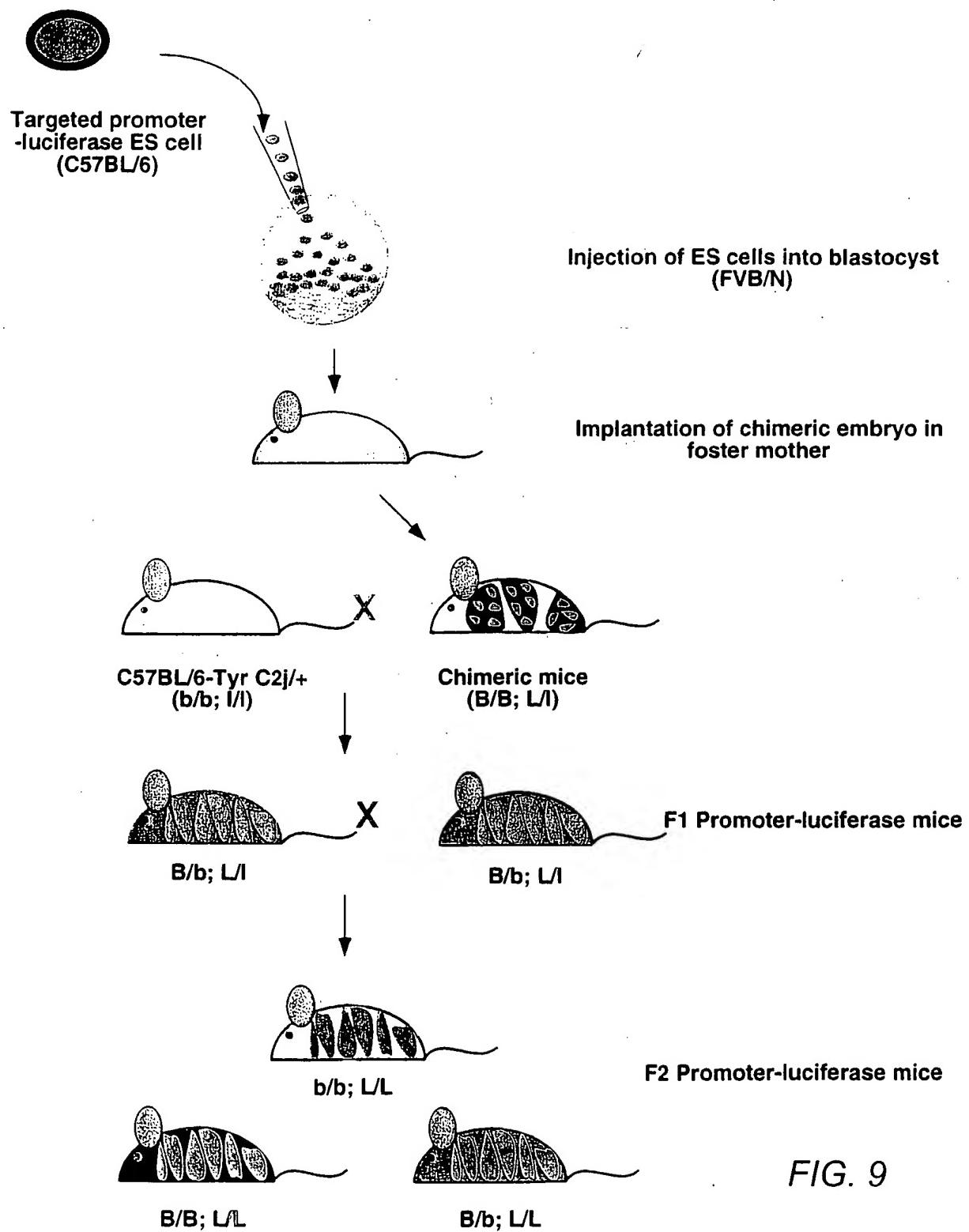


FIG. 8



# Generation of Targeted Transgenic Mice





**pTKLG-Fos/VEGFR2  
targeted transgenic vector  
(Yellow-green luciferase)**



**C57BL/6-Tyr C2j/+ mice with  
yellow-green luciferase**

**pTKLR-Vn/VEGF  
targeted transgenic vector  
(Red luciferase)**



**Targeted transgenic mice**



**C57BL/6-Tyr C2j/+ mice with  
red luciferase**



**Dual luciferase  
Targeted transgenic mice**

**FIG. 10**

10      20      30      40      50      60      70      80      90      100

AAATGTCCTGGCTTACAGGCCACTGCCTCAAGCTCTGCAGCTCAGATAACAAAGGAAGCTTGACAGCATGGAACGGGTAC

TTTACACGACAGAAATCTCGGTACGGACTCGAAGACGCTGAGCTATGGTTCTCGAACCATGTTGCTGTAATTGTTACCCAGCCCCAGTG

110      120      130      140      150      160      170      180      190      200

AGTGGCTCCCGTCCCTTCACCCCTATGGAGACGAGCTGAGAGATGTCCTCCAGGGAGTTCAATTAGCCTTAATCAGCAATTAGTCAGATCTGTCATCCTA

TCACCGAGGGAGGGAAAGTCCCATACTCTGCTCGACATCTCTACAGAGGTCCTCAAAGTAATTAGTCCTTAATCAGTCTAGCTACACACGGAT

210      220      230      240      250      260      270      280      290      300

TGCTTTACAAGAAATCTCAGTGGCTGAGATCATCATCAGAGGCTCATGGGTTCAATGCCCCATCCTTGTAAAGACCTTGAAACTGCCAACCG

ACGAAATGTTCTTACAGTACACCGGACTCTAGTACTCTACCTCCAAGTAGCCCAAAGTACAGGGCATAGGAAGAACATTCTGAACTTCACCGTTGCC

310      320      330      340      350      360      370      380      390      400

ACGAAACAGGAACCTCACCCCTGGTGAATTGCAAGAGCTGTTGTTGACCATCTGCCATTCTCTGTATGACAGGCTGTGAAC

TCCTTTGCTCTGAGGTGGACCCACGGCACTTAACGCTCGACAAACACAACACAGGTAGACGGGTAAGAAGGGACAATACTCTCTGAAACATTG

410      420      430      440      450      460      470      480      490      500

TTAACTGGACTGGGCAAAAGTCATCCACCTTATACATGAATTGCTGAAGAGGCCTTAAACTTGGAGTGTGCATGTGTATGGAAGGGCTT

AAATGACCCCTGACCCGGTTCACTTAGGCTGAATATGTACTTAACGACTTCCTCGAAATTGAACTCACGTACAACAAATACCTCCGGAA

510

CCTATGGATC

GGATAACCTAG

**FIG. 11**



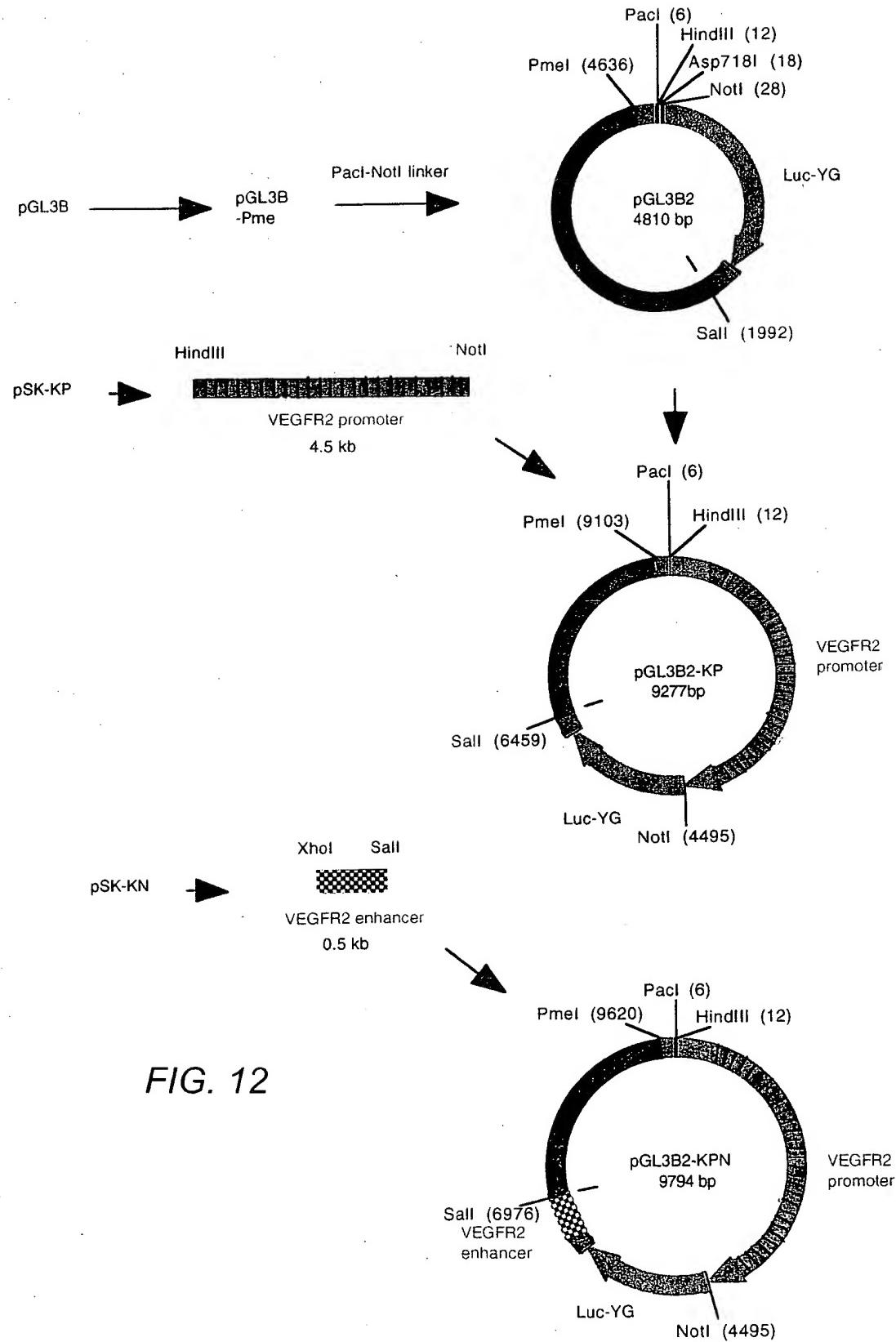


FIG. 12

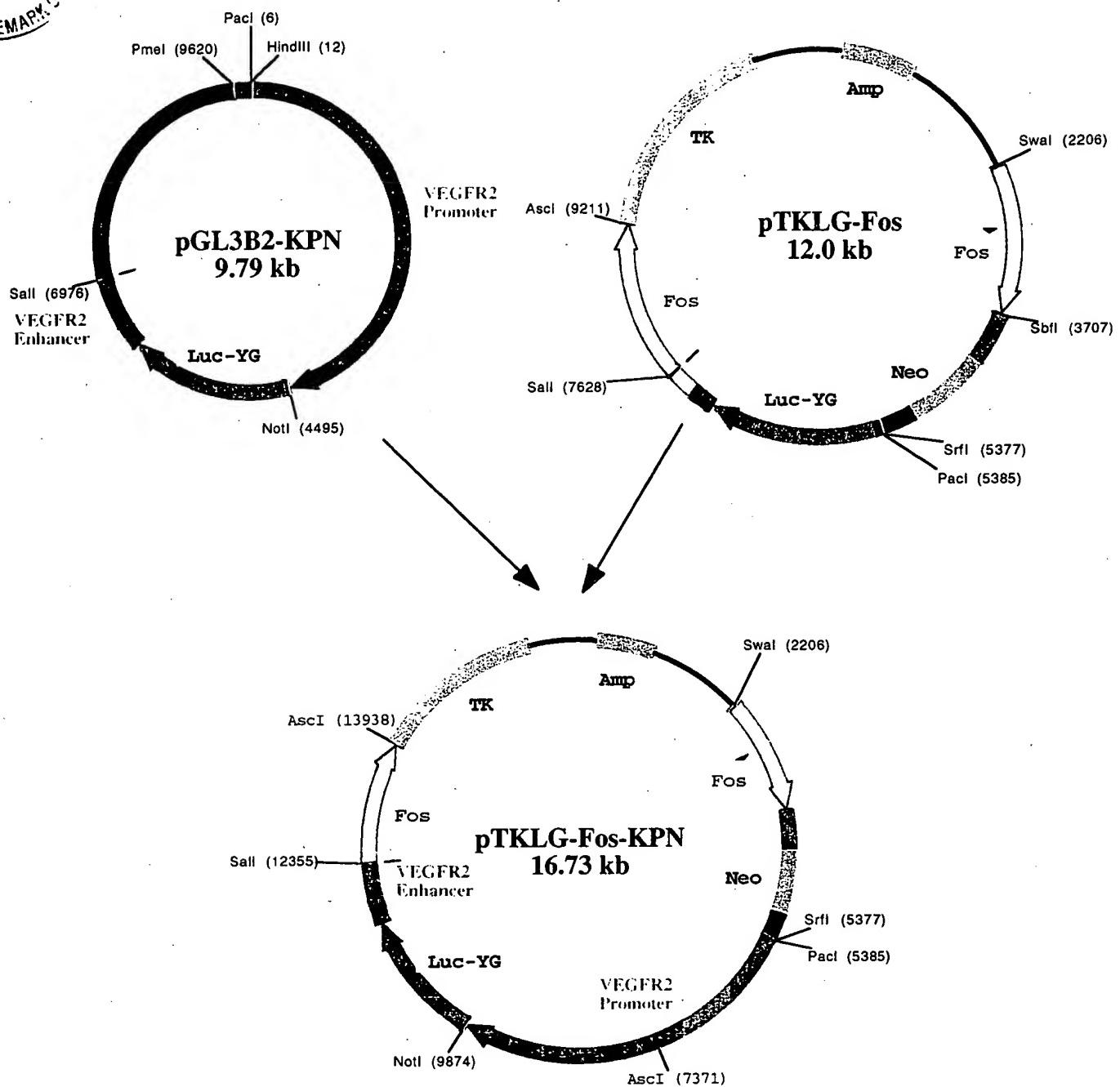
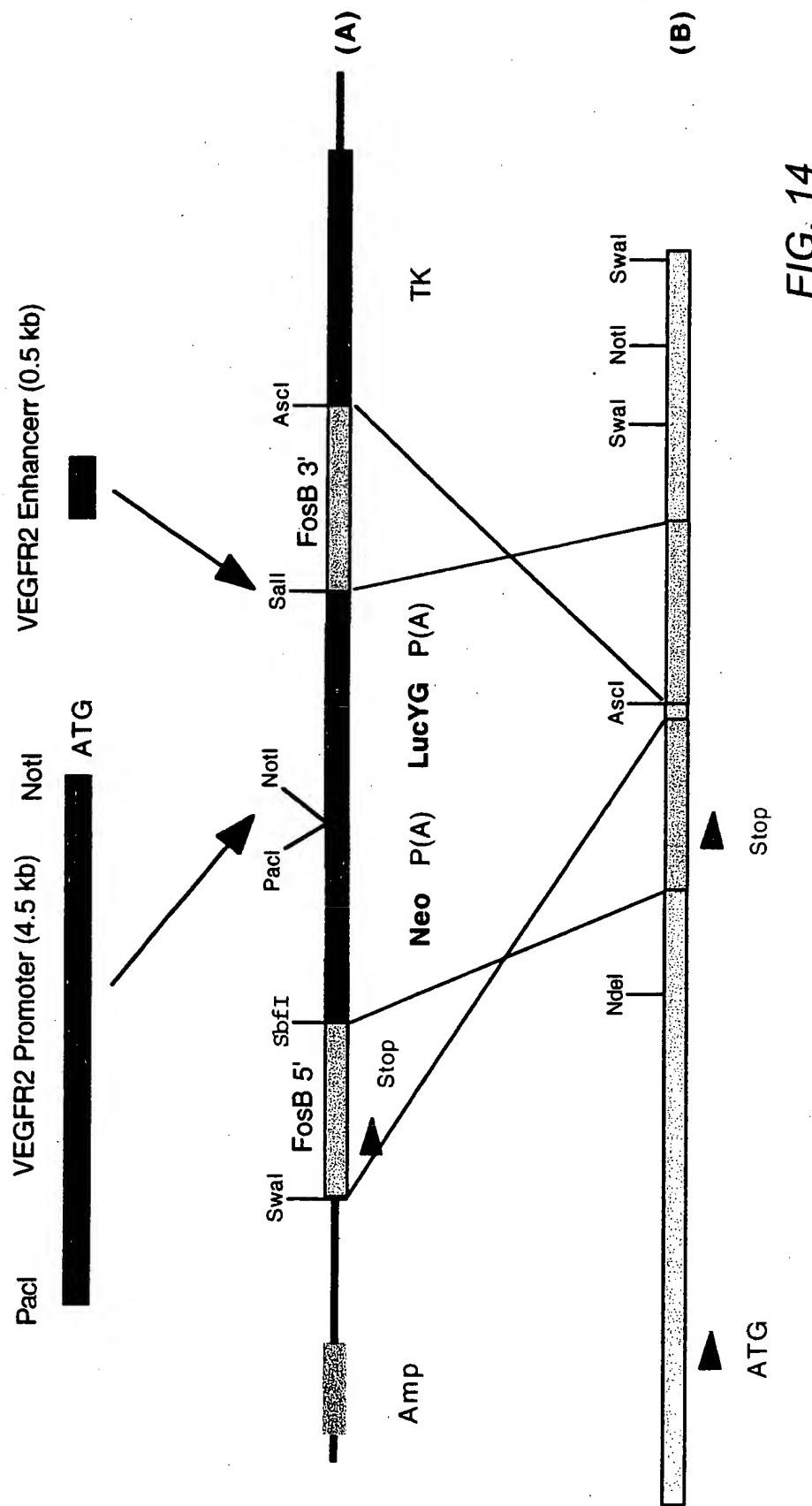


FIG. 13



F/G. 14



FIG. 15-1



510        520        530        540        550        560        570        580        590        600  
CTGACCAGCAGAATGCCACCATGTCAGGTATGATCCAGGTCTGAGATCTGACTACTCAAGACTGTTGAAGGCAAGGTTCACTGGATTCACT  
GACTGGTCTAACGTCAGGCGATACTAGGTCACAACTAGACTAGACTGATGAGTTCTGACCAACTCCGTCCAACGCAACTCCAACTTAAGTGA  
  
610        620        630        640        650        660        670        680        690        700  
CTATTGCCAGCATGTTAACATCATATATATATATATCTCCATTACTTTAGGACAGTGGTTCAGCCTTAATGCTGTAGCCCTTAA  
GATAAACGGCTCTACAAATTAGGTAGTATATATATAGGTAATGAAATCCGTACCAAGACTGGAAAGGATTACACATCCGAATT  
  
710        720        730        740        750        760        770        780        790        800  
TAGAGTTCTCATATGGATGTAATTATTGTGCTACTTCATGACTAATTGCTACTGTGAAAGGTCAATTACCCAGGCTGTGAGACC  
ATCTCAAGGAGATAACACTAACATTAAACACATGAAGTACTGATTAACCGATGACACTTCCAGTAAATGGGTCGACAACTCTGG  
  
810        820        830        840        850        860        870        880        890        900  
CACATGTTGGAACCACTACTTGTAGGCATGGGGTGAGAAGAACATGAAGAATAGAGTAAACAGTGGTCAGTTGGTCAATTATCACAGAAC  
GTGTACAACCTGGTGTGAACTTCCGTAAACCCCAACCTCTCTGTACTCTATCTCATGTCAACACTCAAACCAAGTATATAGTGTCTTG  
  
910        920        930        940        950        960        970        980        990        1000  
ATTCACTTTAAGTTTCAAGCATGTTGTTGTTATATGCTTCTGTTAAAGACTTCACCAAGGTCTTCTTAATCACCATCTCCACACT  
TAAGTGAATTCCAAGTCGTCACAAACAACACATACATACACATTCGAACTGGTCCAGAAAGAATTAGTGGTATGGTCTGAGAGTGGTGA

FIG. 15-2



1010      1020      1030      1040      1050      1060      1070      1080      1090      1100  
CATATCCATCACCTTCACCTTGACTCTAGCAATTGGCCATTCCTGTACCGGCAAGGATCCTTGCACATCTGTTCTG  
GTATAGGTACTCGAAGTGGACATGAGATCGTAAACCGGTAACTGGACATGGTCCCCTCGTAGGTAAGAACGTTGACTGTAACAAGGATCAAAC  
  
1110      1120      1130      1140      1150      1160      1170      1180      1190      1200  
ATTATTACCAACAATGCTCTAGACCATGAAATTGGTCTTGACTTTCGTTAACATCATAAAACAACTCCAGTGGTGGTGGTGCCTGCTG  
TAATAATGGTGTACGAAAGATCTGGTACTTAAACCAAGGAAACTGAAACGAAACATTGGTACTGTTAGGTGACCACCAACCGGACCGAC  
  
1210      1220      1230      1240      1250      1260      1270      1280      1290      1300  
CTGGTGGGGGTAAAGCAGGAAGCCATAAAGTGCCTTATTCAATCTGTTATTGATAACAATTGTTATTCTTCCCATGTAAGATATGGCATCTGA  
GACCACCAACCACTTTCGCTTCGTTATTTCACGGAAATAAGTTAGACATAAACTATGTTAACATAAGAAGGTTACATTTCATACCGTAGACT  
  
1310      1320      1330      1340      1350      1360      1370      1380      1390      1400  
AGTGTAGAGGTCTGAATTCAAACCTCACATACCAAGATAGTATATTACAGACTCCAAACAAATAACACGGCTTGCCCTGACTCAGCCCTGTTCTGA  
TCACATCTCCAGACTTAAGTTGAGCTGTAGGGCTATCATATAATGCTGAGTTGTTATATGTCGCGAACGGACTGAACTTTCGGGACAAAGAACT  
  
1410      1420      1430      1440      1450      1460      1470      1480      1490      1500  
CGTAAGTATAGTAAACATGGTAGCACCCTAGCTTACAAATAATTATAGACCTACTATGAGGGAGTAGAAGGGTATGAGGTG  
GCATTCAATACTCATGGTACCATCGTGGAACTCAAATAAGTCAGTGATTATAATATTCTGGATGATACTTCCCTATCTTCCCATACTCCAC

FIG. 15-3

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INDEXED  
FILED  
U.S. PATENT & TRADEMARK OFFICE

1510      1520      1530      1540      1550      1560      1570      1580      1590      1600  
GGGTCAATGGGAAATAGGAAAACGGTGGAAAGGGAGAGGAAATTACAACAAACCTAATTATGTTGAAATGCCAACATGAACCTAATTACAAAGAAC  
CCCAACTACCTTATCCTTTCGCCACCTTCCCTCTCCTCTTAATGTTTCGATTAACTTTACGGTTACTTGGATTAAATGTTCTTGG  
  
1610      1620      1630      1640      1650      1660      1670      1680      1690      1700  
ACTATATGACCCCTCACAGCTGCTGCTAAGTCTGGAGATTGTTGCTGAGAAGTCAGGTCGTTCCAATCTCATGGAGGATGAAATCAGTCACTTCTCG  
TGATACTGGAACTGTCACACACGATTCAAGACCTCTAAATCACCCTCTCAGTCCACACAAAGTTAGAGTACCTCTACATTAGTCATACTCTCG  
  
1710      1720      1730      1740      1750      1760      1770      1780      1790      1800  
ACACGGACCAATAAACATAGCCAAATCTATGATTAGCATGTAAGATATGAGGGAAACACGGAACACTAGTGGGAGACCTAATTAGTTGA  
TGTCTCTGTTTCTATCCGTTTACATCTAAATCATGGTACATCTATACTCCCCCTTGTCCTTGTATCACCCCTCTGCTTAATCAA  
  
1810      1820      1830      1840      1850      1860      1870      1880      1890      1900  
GTGGTCTCAAGACCCCTTAGAAGCTGAGACTAAAGACAGCAACCAAGGTGAGGGCAGCATCTCCACCTTCCAGTGGAAATGCAACTTAGGGTATA  
CACCAGAACTTCTGGAAATCTGGACTCTTGTGTTCTGTTCTGTTCCACTCCCCGTGAGGGTGGAAAGGTCACTTACTCTGTTGAATCCCATAT  
  
1910      1920      1930      1940      1950      1960      1970      1980      1990      2000  
CAGCTGATTCCCACATGGCAACAAAGCTCTGAGACTAGAGATGCCTAAATGTCACCATACCCAGCTTCAAGGAAAGTTCTGAGCATGTCAG  
GTCGACTTAAAGGTGAACTGTTCCGAGACAGCTCTGATCTCTACGGTAACTACTGGTATGGGTGGAATAATCCTCAAGACTGCTACAGGTC

FIG. 15-4

O P E R A T I O N S  
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U.S. PATENT & TRADEMARK OFFICE  
SEARCHED SERIALIZED INDEXED  
Searched by: [Signature]

2010	2020	2030	2040	2050	2060	2070	2080	2090	2100
CACCCCTACACTAGGCAATGGAATCACATGTCAGAGATGGAAAGTGACAGTCAGTAACCCCTTCAAACCTAACCTACTCGCAACT									
G'GGGGATGTGATCCGTAACTTAGTTGTTACAGGTCTCACCTCAGTCAGTCATTGGTTGGAAAGTTGAAGGTTGATTAAGGACTGTA									
2110	2120	2130	2140	2150	2160	2170	2180	2190	2200
CTCCAGACATATGGGCCCCGACTGTTGGAAACCTCTCATATTGTTCTTGTATTGCTTCATTCGGAGATCCAAAGGAGGAGTTATCTAGGTAC									
GAGGTCTCTATAACCGGGCTCACACAACACCTTCGAGAGTAATAACAAGAAACTAACCAAGAGATGTAAGGCTCTAGGTCTCGTCATAGAGTCCATC									
2210	2220	2230	2240	2250	2260	2270	2280	2290	2300
AGGATCGTGTGAAATGTCGCCATGATTAACCTCAATTATACCTGTAGTTATACACATCCTAACACCGCTGATGTCCTGGAGAACATTGACCAGCT									
TCCTAGCACCTACAGACGGGTACTTAATGAAAGTTAAATATGGACATCAATTGTCAGGTTGTCGACTACAGGCTCTTGTAAGAATCTGGTGA									
2310	2320	2330	2340	2350	2360	2370	2380	2390	2400
GCTAACAAACCCAGGAGCATTAGAAAAAACTGACTCACCCACCGTCTGGATAATGATGAGAGAACAAATGGATTATCTACAGAGTATGAAA									
CGATGTTTGGTCTCGTAAATCTTTTGACTCAGGGGGAGACCTATTACTACCTCTCTTGTAACTTAAAGAATGTCCTACACTT									
2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
GTTACATAATTTCCTGGATAATGGAATTAATAACATCAGGATCTTCTGGACTGCAGAGGAGACAGGTGAAGCCATCTTCCGGAAAT									
CAATGTTAAAGGACCTATTACCTCTTAATTATGTTGAGAAAGACCTGACGCTCCCTCTGCTCCACTCGGTAGAAAGGCCCTTA									

FIG. 15-5

2510        2520        2530        2540        2550        2560        2570        2580        2590        2600  
 GGAGGAGGAATTCTACTATTTGGGGTTAACAACTCACTACTAGCATGGCAAAGGAACCTGGCTTTCAGAGTAAGCCACCCAGTA  
 CCTCCCTCTTAACTGATAAACCCCATTGTATGAGAATGATCGTACCGTTCCCTTGACCCGACGAAAGTCTCATCGTGGGTCTAT  
 2610        2620        2630        2640        2650        2660        2670        2680        2690        2700  
 GATGCTGCAAGGCCTGCTTTCATCCAGGAGAACTCAACAGGGCCAGGCATGCCAACATGCCATAATGTAACCACCTAGGCTGAGGAGAT  
 CTACGACGTTCCGACACGAAACTAGGGCTCTTCAGTGTCCCCGTCGGTCTGTACCGGTATTACATGGTGAATCCGACTCCGCTTCTA  
 2710        2720        2730        2740        2750        2760        2770        2780        2790        2800  
 CAAAAATCCCAGGGCAGCTTAGTTGTGTAACAGACCTTTCGTCAAACAAAGATTACAAACAAACAAGCAAACAAACAAATAAAAAGGAGAAGA  
 GTTTTAGGGTCCGGTCTGAATCAAACACATGTCCTGGAAACGGAGTTTGTCTAAATGTTTGTGTTGTTGTTTATTTTTTCTCTCT  
 2810        2820        2830        2840        2850        2860        2870        2880        2890        2900  
 AAATAACTGCCAGGGAGGTGTGACCAATGAAAGACTGTGAGTGACCAATCTGCCACAGTGAGCTGGCTGAGGTTGGCAATGTT  
 TTATGACGGTCCCTCCGACACTCTTACTCTGAACTACTCACTGCTGAGGCTGTCACTGGAGCCGTTGGCAACACAGATCTCCATTCCGAAACCGTTACAA  
 2910        2920        2930        2940        2950        2960        2970        2980        2990        3000  
 CCCACGTTTCATCCTGGTTATATGGCTGAGGCCAGTTCACAAATGTCAGCTTCAGGTCTTACAGACATTTAGCCACATGTGCT  
 GGGTCCAAAGGTAAGGACCAATATACCGAACTCCGGTCACCTGAAAGTCTAGAGCTGAGGCTCCAGAAATATGCTGTTAATCGGTGTACACCA

**FIG. 15-6**



3010      3020      3030      3040      3050      3060      3070      3080      3090      3100  
AGCTTGCCGCTGAATGCTGGCACTTGAGAGACAGAGGATTGCCACAGTCCTCCATTCCAGCTTGTGCTGCTCACCCCTGA  
TCCGAAACACGGACATTACGACC GTGACTCTCTGGTTCTGCTCCTAACGGTGTAGAGGTAGGTGGATCCACGACACAGTGAGCAGACTGGGGACT

3110      3120      3130      3140      3150      3160      3170      3180      3190      3200  
CCCACTCCCCACCAACATCAAACACGGTATCACTGTGACACTGGTACTCACTCAGAATCACCCAGATTAAAGATTCTGGAGATCACTCCTGGGATGCC  
GGCTCAGGGTGGTTGTAGTTGTCCGATAGTGACACTGACACTGACATGACTCAGTCTAGTGGCTTAATTCTAACAGCCCTAGTCAAGGACCCCTACGC

3210      3220      3230      3240      3250      3260      3270      3280      3290      3300  
GGAAAGTGAGACCAGTTATTTATAATATCTATACTCATGAGATGATGGATCCAGATGAGAAATGTAAAAATTAGTTATAATGAGAAGAATAGGT  
CCCTCACTCTGGTCAATAATTATAAGAATATGAGTACTCTACTACCTAGGTCTACTCTTACATTAAATCCAAATATTAACCTCTTATCA

3310      3320      3330      3340      3350      3360      3370      3380      3390      3400  
GTTTCTTCAAGTTTACATCTCTCCACTGTGGTCACTTCAGCTAAGGTCACTCCCCATGATCTGTGAGGCTCTCACATCCCAGGTCTCTGGACTTT  
CCAAGAAGTCCAATGTAGAGAGGGTACAACCACTAAAGTGATCCAGTGAGGGTAACTAAGGACACTCCGAGAGGTGTAGGGTCCAGAGACCCCTGAAA

3410      3420      3430      3440      3450      3460      3470      3480      3490      3500  
CTAGAGGGTCCCCCTGCTTCCCAGCCCTGAAATCGGTATTTCTATTCTCTCCGGCATCTGGCTTCTCTCTGCCCCCGCCACACACCT  
GATCTCCAAAGGGGAGGAAGGGTGGGACTTTACGATTAAGATAAGTAAGAGGACCGTAAGACCCGAGAGGACAGGGGGGGGTGGGTGTGGA

FIG. 15-7





3510	3520	3530	3540	3550	3560	3570	3580	3590	3600
GATTCCTGCCCTTCTCCCCCTCTCTAAACAGGTTCCCTCCCTCCCTGATTATTTTGTTCCCTCCCTAAATGACTGTAA									
CTACGACGGGAAAGAGGAGGGAGAGAGGATTGGTCCACGGAGGGAGGAAGGGACTAATAAACAGGAGGATTACTCAGACTT									
3610	3620	3630	3640	3650	3660	3670	3680	3690	3700
GCATCCTCACITGGACNTTCCCTCTGTAAACTCATATGCTCTGTGTTGTATCATGGTTATCTGTACTTTTGCTTAATGTTCACTTATCAGT									
CGTAGGACTGAACTGAGAACAAATTGAACTATACACACTAACATAGTACCCATAAGACATGAAAACCGATTACAAGTGAATAGTC									
3710	3720	3730	3740	3750	3760	3770	3780	3790	3800
GAGTGCACACAGGCATATTCCTTTGACTTGGTTACCTCACTCAGGATATTCTAGTTCTATCCATTCGCTGCAAATTCAATGATGTCATAAT									
CTACGTTGTCGATAGGAAACTCAAACCCAATGGAGTCAGTCCTACTATAAACAGATCAAGATAGGTAACGGACGTTTAAGTACTACAGGATTA									
3810	3820	3830	3840	3850	3860	3870	3880	3890	3900
TTTAGTAGCTGAATAGTATTCCATCTGTAAATGAAACATATTTCGCTATCTGTCAGGGLAACTGGTGTTCAGCTCTAGGTAT									
AAATCATCGACTTATCATAGGTAACACATTACTTGGTATAAACAGCTAGACAGAAGTCGACTCCCCTTAGACCCAAACAAAGGTCGAAGATCCATA									
3910	3920	3930	3940	3950	3960	3970	3980	3990	4000
TATAATAAGGTGCTATGAAACATAGTGGAAACACATATCTTGAGGTATGGTAGAGCATCTTGGTATATACAGGAGGGATAGTGGGTTTCAG									
ATATTATCCAACTCTGTATCACCTTGCTATAGGAACCTCCATACCATCTGTAGAAACCCATATATAGGTCTCACCTATCAACCCAAAGTC									

**FIG. 15-8**



4010      4020      4030      4040      4050      4060      4070      4080      4090      4100  
GTAGAAGTATTCGAATTTCAGAACCCAGATGATTAGATGACAGCAGGCCCTAGTGAGAGATGGGCCAACACCTTCAAAATT  
CATCTGATAAAGTTAAAGATTCCTTGGTCTAACTAAATCTATGTCGGGGATCACCTCTACCCGGTTGGGATGGAAGTTTAA  
  
4110      4120      4130      4140      4150      4160      4170      4180      4190      4200  
TGGTCCAGAATTGTTCTCTCAAAGAAATGCAGGGACAAATGAAACAGAGACTGACCAACCAACTTGATCCATCCTATGGCAAGCACAAAC  
ACCAGGTCTTACAACGGAGATTCTTACGGCCCTGTTTACTTGTCTCTGACTGGTTGGTGAATCCTAGGTAGGATACCCGTTGGTGGTGGT  
  
4210      4220      4230      4240      4250      4260      4270      4280      4290      4300  
CCAGACTCTTATTGATGCCATGTTGTGCTCGAGACAGGAGCTTAGCATGGCTCTGAGACACTCTATCAGCAGCTGACTGGGACAAATGCAA  
GGTCTGAGATAAACTACCGTACACACCAACGTTGCTCTGAATCGTACCGAGACTCTGTGAGATAGTGTGACTGACCCCTGTCACCT  
  
4310      4320      4330      4340      4350      4360      4370      4380      4390      4400  
TCCAACCCCTGAACTGGGTCAGGACCCCTATGAAAGAATTAGGGAAAGGTTGAGGAGCTGAAGGGATGGCACACCCATAGAAAACAAGTGTG  
ACCGTTGGAAACTTGACTTCCAGGTCTGGGATACCTCTTAATCCCCCTCAACTTCTCTGACTTCCCCTACCGTGGGTATCTTTGTTCACAG  
  
4410      4420      4430      4440      4450      4460      4470      4480      4490      4500  
AACTAACCCCTCAGAGCTCCAGAGACTAACCAACTAAAGAGCATACATGGCTCTGGTCTGGTCCAGGGACTGCTTGTGGCTCACT  
TTGATGGGAGTCTCGAGGGTCTCTGATTCTGGTGTGATTCTCGTATCTACCCGACCAACACCGGACCGTCTCTGACGGACAGACGGAGCTCA

FIG. 15-9



4510 4520 4530 4540 4550 4560 4570 4580 4590 4600  
AGGAGAGATCTGCCATTACCTCTAGAGACTTGAATGCCCAAGGGACAGGACCCACAGGTGGGATGGTGTGGGTAGTGCGGTGGTGGGG  
TCCTCTCTACACGGATTAGGAGATCTGAACTACGGGGTCCCTCCCCCTGTCCACCCCTAACACACCCATCACCCCAACCCCC

4610	4620	4630	4640	4650	4660	4670	4680	4690	4700
TGGGGGTGGGATGTGAATGGGTGACTCAGGGAGGAATGAGTGAGTGGGTGGTACAGCATCTCTCAGGCCAAGGGAAAGGGAGGTGGATAACAAC	ACCCCCACCCCTACACTTACCCACTCACTCCCCTACTCACTCACCCACCATGCGTAGGAGACTCCCGTTCCCTCACCTATGTTG								

4810 4820 4830 4840 4850 4860 4870 4880 4890 4900  
CAGCAGGGCTGGGATTAGAACCCAAAAGTTATTCTGAGACTCTTTCACCAAGCTAAAGTTCTCAGAATCTATAGAATGCCCTTTTGCG  
GTCGTCCCCGACCTTAATCTTGTGGTTTCAAAATAAGACTCTGAGAAAGGTTATGGTTCGAATTCAAGAAGCTTAAGATATCTTACGGAAAACCG

4910 4920 4930 4940 4950 4960 4970 4980 4990 5000  
AGAACTCTTGGCACTTTAATTAAGAACATATGAGAGATGAAAGAGCTACTAAGATCTAATGAAATCAGATGCTAGGCACAGTCCCAGATACT  
TCTTCAGAACCTGAATTATTCTGTATACTCTCTACTTTCTCGATGATTCTAGATTACTTTAGTCTACGATCCGTGTCACGGCTATAGA

FIG. 15-10



5010	5020	5030	5040	5050	5060	5070	5080	5090	5100
TTACATAGTAATGACTCTTAGCTTGTGACAGGGCCTCATATGTTATAATGAATTCACTGTTGTCAAAGATGACCTTGAACTCTTAATCC									
AATGTATCATTATACTGAGAACATCAAACTCTGTCCCCGAGTATATCAATACTACTTAAGTGACAAACAGTTCTACTGGAACTTGAGAATTAGG									
5110	5120	5130	5140	5150	5160	5170	5180	5190	5200
ATTCCTAAAGTGTGTCTCATATGTTGCACCACTCCTGGCTCATAGCTTGTAAACACCAGTGGAGAGTCCACACGCTAAC									
TAAGGTTACAACAACTACAAACCGTGGTAGGGACCGAACTATCACAAAAATTGTGGTACCTCTAGGTGTGCCACACTCTAGGTGTGCCACATG									
5210	5220	5230	5240	5250	5260	5270	5280	5290	5300
CTCAGCATCTGGTGAATCAGGCAGGAGGGGGGGTGGTTGCAACCTGCTGGCTATAATATCTAAGTTCACTGTTAGGGCTGCATAATGAAACACTGCTT									
GAGTCGTAGACCACTTAGTCGGCTCTCCGCCACCAACGCCACCGATATTAGATTCAAACTCAATCATCCGACGTATTACTTGTGACAGAA									
5310	5320	5330	5340	5350	5360	5370	5380	5390	5400
AAACACAAACCAAAACCATGAAGGAGATACTATGCCATTAAAGTCTCTGGAAATAGCTATCATAACTTACCTCTGCCAGTCTGCC									
TTTGTGTTTGTGTTGCTACTCTCTCTATGATAACGGTAATTTCAGAGACCTTACCTTATCGATAGTATTAGAACTGGAGACTCCGTACAGCCG									
5410	5420	5430	5440	5450	5460	5470	5480	5490	5500
CTCAGGGTGTGCCCTGAGGACTGAACACGGCTATCCACTCTCAAGTTGGAAACATTACTAGTCCTCACTGCTCTGCTCTGACCTGTAAACAGCTGAGTCAG									
GAGTCCACACGGACTCTGACTGTGCCCCGATACGTGAGGAGTCCACCTTGTAAATGATCAGGAGTCAGAGCAGAGAACCTGGACAATGTCGACTCAGTC									

FIG. 15-11



5510      5520      5530      5540      5550      5560      5570      5580      5590      5600  
GGTCAGCCCTCAGCTGCTGAGGACAGAGCTATCACCCCTGAGATGGAAAGCATACAGGCACTCACATCAGCCCTGAAGTGATAAAC  
CCAGACGGGACTCGTCTCGACTCGATAGATGGGAGCTAACCTCGTAATGTCCGTGACTCTAGTCGGACTCACTATTGG

5610      5620      5630      5640      5650      5660      5670      5680      5690      5700  
TAAGGCAGAAATCCACCAAGACTAACCTGAGCTGCCCTCCGCTCTCTCTCTCTCTCTCTCTGGGGAAAGAGAGGGGAGTCCTTCCTTGATGCCAACGTCCTGTC  
ATTCCGCTTTAGCTCTGATCGTCACGGAGGGCACACAGAACGACACGGACACCCTTCTCTCCCCCTAGGAAGGAACCTACGGTCCAGGACACAG

5710      5720      5730      5740      5750      5760      5770      5780      5790      5800  
TAGTGGCACGCTCCTTCATTCCTCAGGACACCAAGTGATCACCTGGTAAGGAAGGTTCAGGTCCTGACTCGCTGGAGAACATCACTCATCCATC  
ATCACCGTGGAAAGGAAGTAAAGGGTCACTCTCTCACTAGGGACCCATTCTTCAGTCACGCAACGACTCGACCCGACCTTAAGTAGTGAGTAG  
ATGAGACGAGGACATCTGTATAGTGAGAACACCCAGAAATATCTCTACTAAATATGAAACACAATACACACATAAGTAATCC

5810      5820      5830      5840      5850      5860      5870      5880      5890      5900  
ACTCTCTCTCTGAGACATAATCACTTCCTGTTGGGTCTTTATAGAGATGATTATRACTTGTGTGTATTCTATTAGG  
TGAGACGAGGACATCTGTATAGTGAGAACACCCAGAAATATCTCTACTAAATATGAAACACAATACACACATAAGTAATCC  
TCACATGGAGGTACACATTTAGGGTCTGTTCCATCACACGGGCTTGAATTAACCTCAGTCTGGTTTACCCGCTGAGCCATCTACCTGCC  
AGTGTACCCCTCCATGTGTTAAGTCCACAGACAGAAAGGTAGTGTCCCCGAACTTAATTGAGTCAGAACCAAATGAGGACTCGGTAGAGTGGACGG

FIG. 15-12

O P U S  
MAY 24 2004  
53150  
PATENT & TRADEMARK OFFICE

6010      6020      6030      6040      6050      6060      6070      6080      6090      6100  
T GATTATTTAAATCTCGGAGTAATCCAGGAGCTGGTTATGATTGTAGTATCACACTCGGGAGGCTGAGGACATCGTATCAGGCTCCAGG  
ACTAATAATTAGAGGCTCATAGGTCTCACACCAATACTACATCATAGTTCGAGCCCTCCGAATCCCTCGTAGCAATAGTACTCGAGGCTCC

6110      6120      6130      6140      6150      6160      6170      6180      6190      6200  
CTAGTTCCACGCTTGCCATAAGCTGTAGACCAACTCACTCTCTAAAGTGCCCTCCATATTGTATATAATTGCATCTGAAATTCTGTTGCCA  
GATCAAGGTCCGAAACGGATCGACATCTCGTCACTGAGACAATTTCACGGAGGGTATAAACATATAAACATATAAACAGTACACTTAAGACAAACGGT

6210      6220      6230      6240      6250      6260      6270      6280      6290      6300  
ATAACTATGAAATTATTACATTAACAAATCTTCTGTGCCAAGTTCTCAAACCAATTAGATCACACTCAGATGAATGCTAAATAAAATTAAAGCTGT  
TATTCATACITTAATAAGCTTAATGATTAGAAGGGACACGGTCAAGAGCTTGCTTAATCTAGTGTGAGCTACTTTAACGATTATTAAATTTCGACA

6310      6320      6330      6340      6350      6360      6370      6380      6390      6400  
ACCCAGTAGCATGGTATATTGGCTCAGGGCAACAGGAGGGATCTGGGTGAAGAAAATTAGGCTTAATGGCTCTGGAAATCTGCTCTAGTGGCTC  
TCGGTCATCGTACGCCATAACCCGAGTCCCCTGTCGGCTACACCCACATTCTTATCCGATTACCGACACCTTAGACCAGAGATCCCGAG

6410      6420      6430      6440      6450      6460      6470      6480      6490      6500  
CCCTGAGAGCTAACACCGCTCCCTCAANTGATTCGCTCCAGTTATGATTCTCATCACAGGAACCTTGTGCCCCATTCAACCCCTGA  
GGGACTCTCGACTGGAGCTGGTGCAGGGAGTTAACTAACGGAAAGGTCAATACTAACAGACTGACTGTCCTTGAACACGGGTAAAGTTGGACACT

FIG. 15-13

6510 6520 6530 6540 6550 6560 6570 6580 6590 6600  
 GTGAAACAAACACGGAGCAAGTGCTGCCAAGCCCTCTGTAGGGATCCAATGCCAAC  
 CACCTTTTGTCTCTCGTCAGGAGGGCACGGGTTTGGAGACAGTCCTAGGGTTACGTGGGTC  
 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700  
 GCGTGCCTCATCGATACATACTAGGTGGAGGGCTCTGTTATTCAATTCTGGCTATGAGGGATACCC  
 CGGACCAAGGACTAGCGTATGGTATCCACCTCCCCAACAAACTAAGGACCGATACTCTCTATGGGATA  
 ACCTACTTGTAAACAAAGATCCCTCTGCCCAACAACTCAGTTAAGGCAGGAGCAGGAGGGCTCTGCT  
 TCGAATGAACATTGTTCTAGGGAGACGGGTTAGGTCAAATCCGTCTCGTCTGGCTCTGCTCTGCT  
 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900  
 TCGATAGGGCTCGCTCGCCCCAAGCCCTGCTTACCAAGTGCCTTAAGATAACGGCTTCCCATCCTA  
 ACCTATCCCAGCCGAGACGGGTTGGGACCACTATGGTTCACGGAATTCTATGCGAACGGTAGGAT  
 TAGACGTTCTCTGCTCTGCTCTTCCCTGA  
 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000  
 TAACCTCCCTGCTCAGACAGAAATGAGACTGTACCGCTGCTTCTGCTGTTCTCTGCCCAACTTG  
 ATGGGAGGACACGGAGCTGCTTACTCTGACAATGGGGACGAAACACACAAAGGAAACGGGGTGA  
 CATTGCTCTGCTCACCTGGTACCG  
 7010 7020 7030 7040 7050 7060 7070 7080 7090  
 GAGGGGAGTCGCAACTCTGACTTGTAAAGCTTCCAGGGACTCATCTGCTGCGCTGGATGGGAGA  
 CTGGGGCTTCAGGGTTCAACACTAACACTTCAAGGGCTGAGTACGAGTAGACACCTGGGACCTAC  
 CTCGGCTTCAGGGTTCAACACTAACACTTCAAGGGCTGAGTACGAGTAGACACCTGGGACCTAC

**FIG. 15-14**



10            20            30            40            50            60            70            80            90  
CTTGGGTTCACTTCACCTCTGGAGGCTCCAGGACCGAGTTGAACAGTCTTAGAAGAAATGCTGGCTAGAAC  
GACTCCAGGTCAACCGUGAGCTGGAGACCGTCTCCGACGGTCCCTGCTGCTCAACTTGTCAGAATCTCTTACGCCAACCTG  
110            120            130            140            150            160            170            180            190            200  
AGGTGGCAATGGGGATGCCGACCACTTCTGGTTGCATAGAGGAGGAGGCTTCAAAGTGGAAACAGGAGGGAGGGAGGATAGCAAT  
TCCACCGTACCCCTACCCCTCTGATAAGACCAACGTAATCCTCGTCTCAGGAAGGTACGACCCCTTGTTCGGTCTCCGTCCTCTGTTACCGTAA  
210            220            230            240            250            260            270            280            290            300  
GATGGCTCTGTATGTGTCCCTCTCGTTGCATTAACTGAGCAAATTGGCTTGTACATCTGCAACTCMAAGAGGTAAATTAGCCAAATGACTG  
CTACCGAGACCATCACAGGACAACTCAACCTAAATTAGACTGGTTAACCGAAACTGTAGACCGTTGACTTCTCCATTAACTCGTTACTGAC  
310            320            330            340            350            360            370            380            390            400  
ACACATAGATATCTTAATGCTCAAGGAACTTTTTTTTGAGAGTTAGCAGGAGTGTAGAAACTGCAAACCAATCCGTATTCTTC  
TGTTATCTAGAATTATCAGTCTTAAAAAAAACCTCTCAATCGTCAGTCCCCTACCATCTTGACGTTGGTAGGCATAAGAAC  
410            420            430            440            450            460            470            480            490            500  
TGGAGATTTAGACAGTGTAGCTACTACCAACAUAGCTTAAGTGGAGGAGTAAGATGCAAGGACCAAGGTGACAGGCTCCAGGTCTGTAG  
AACTCTAAATCTGTCACCTACGATCGGTGTTCTCAAATCACCTCCTCTCATCTACGTCGGTCCACTGTCCGGTCCAGACATC

FIG. 16A



510        520        530        540        550        560        570        580        590        600  
 CATAGCTTACAGATGAGATTCTTACAGAGAGCCAGGGAGGTGCATGGCTAACAGCAGATCTGGAGGGGGCAGGAGTCAGCTGGGGCACTCCAG  
 GTAAATCGAATGCTACTCTTAAGAACGATGCTCTCGGICCCAGACGTAACCGATTTCTGCTCTAGACCCCTCCCCGGTCCCTAGTCGACCCCCGTGAGGGTC  
 610        620        630        640        650        660        670        680        690        700  
 CCTTCAGAAAGGAACCCCTATTCTGGATTAACTGATAACCCAATTCCCACCAAGGCTCTTCCTAGCTCACATCACAAACACAGA  
 GGAGGTCCTTCCGTGGAAATTAGACCTTAATTGACTATTGGGTTAAGGGTGGCGGACCGTCCGAGGAATCGAGTGTTAGTGTGTC  
 710        720        730        740        750        760        770        780        790        800  
 AGGATTTGTTAGATGGGGTCACTGCTGATCTCTATACCTACTTCCAAAGACCAATTATAAAAGTTATTACCGCCGCTGTCGTCGTCGTC  
 TCCTAACAAATCTACCTCACTACGAACTAAGAAGATATGATGAAGGTTCTGGTTAAATATTCAATAATGGGGCACACACACACACACA  
 810        820        830        840        850        860        870        880        890        900  
 GTCGTGTTGTTGTTGTTGTTGTTGCACTGTTATATGGATGTCAGAGTTGGTCTCTCCCTCTGCAAGTGTGGCTTAGAGATGAACTCAGAT  
 CA  
 910        920        930        940        950        960        970        980        990        1000  
 CATGAGCAAGCACCTTGCCTCCCTGCTTCCAGCAGCTGACCAGTGTCTCCCCAAGATGTGGAGCTGGACTGAAGAGATCACAACTGCCA  
 GTACTCGTCTGGAAACGGGAGGATACAGGGGGTCTAACACCTCGACCTGACTCTAGGTTAGACGGT  
 1010      1020      1030      1040      1050      1060      1070      1080      1090      1100  
 GATGGCCAGAATCTTACTCTTGGACATTTGGTGTGATGGGAGTGAATACCCATGGGACATGGCTGTGATGGTGTGGAAAGTGATGAAAGAAA  
 CTACCCGCTCTAGAAATGAGAACCGTAAACACAGACTACCCCTCACTTATGGTACCCCTGTAACCGACAGTACCAACACACTCACTTACTTT

**FIG. 16B**



FIG. 16C

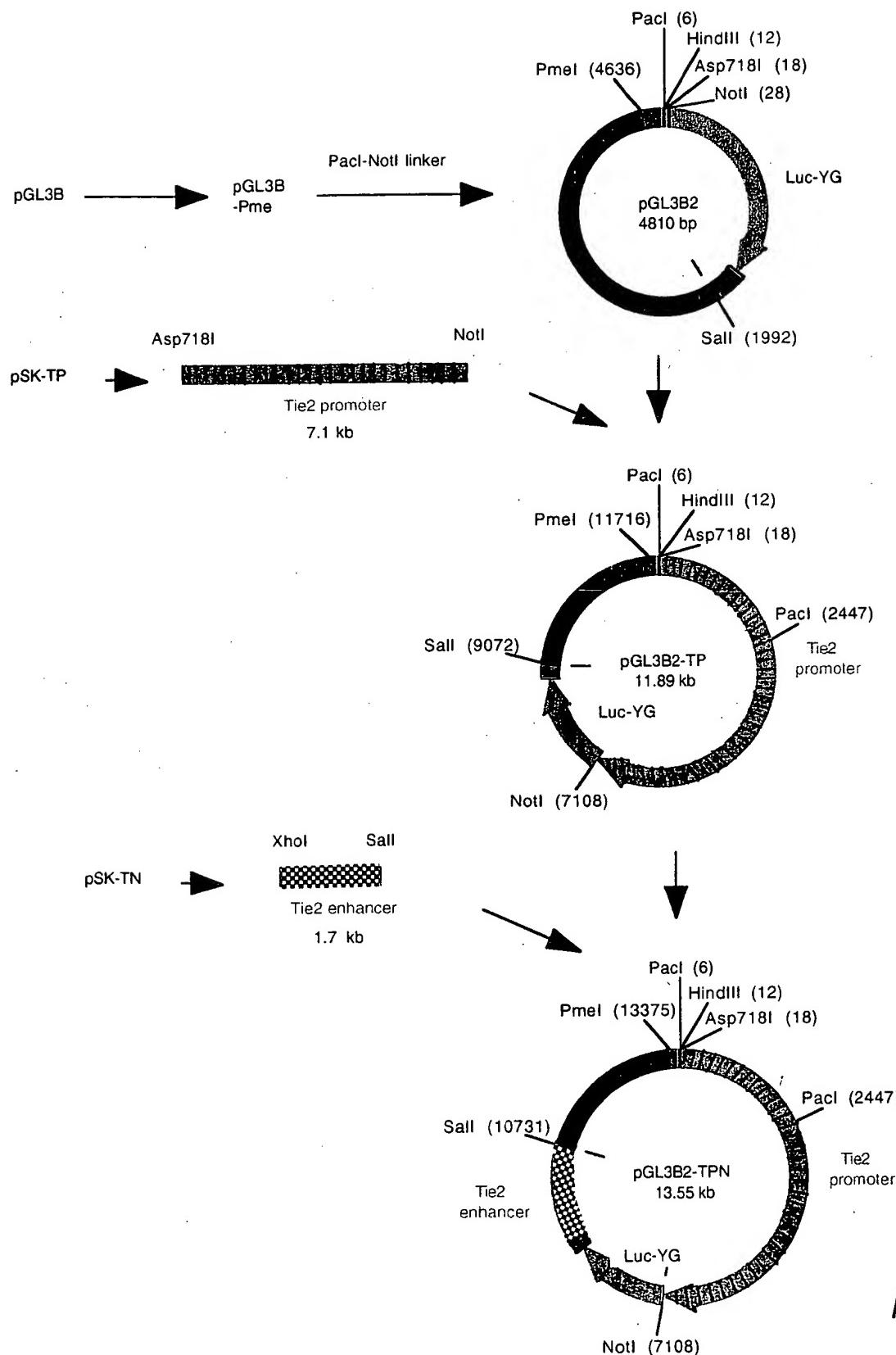


FIG. 17

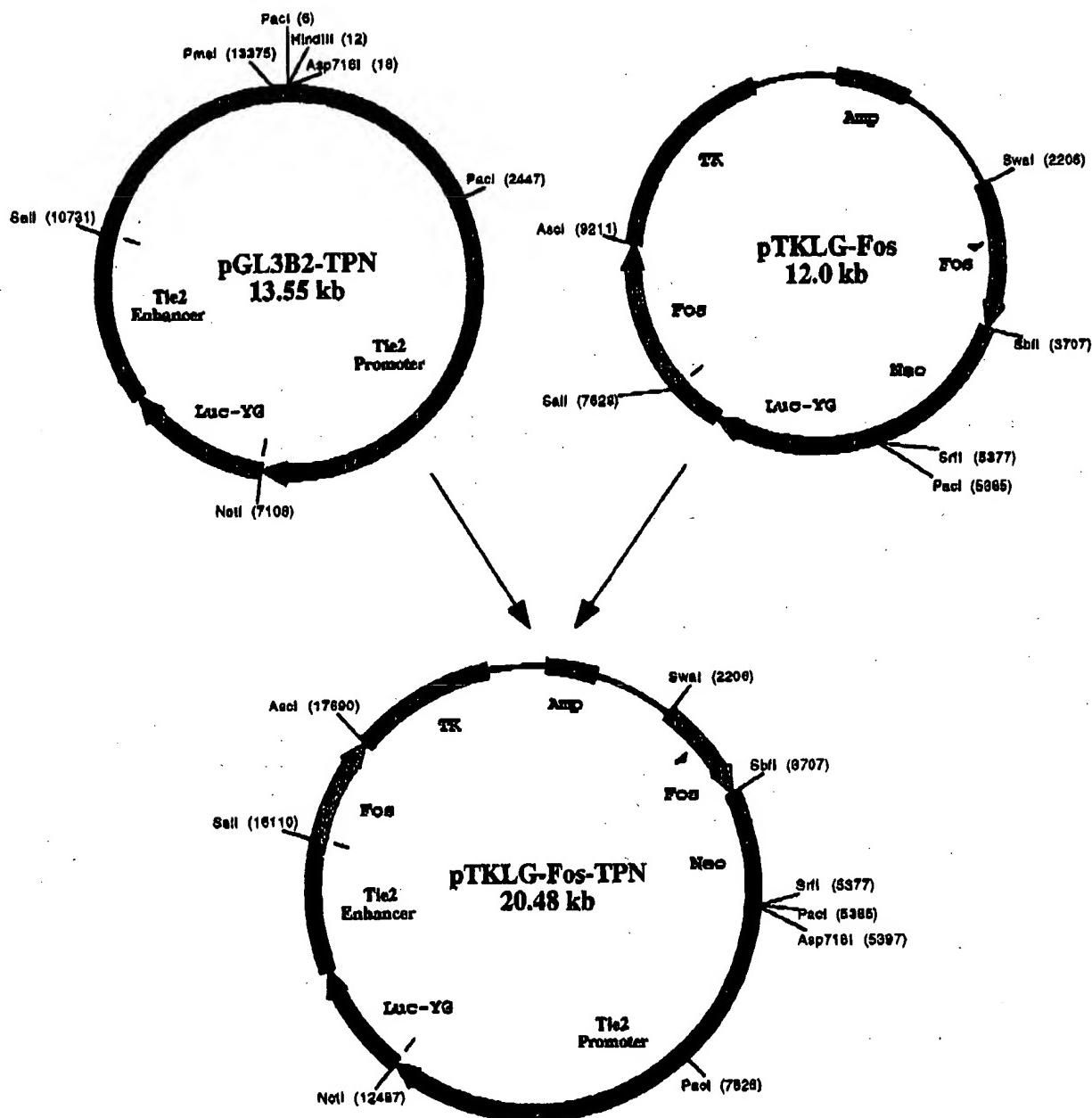


FIG. 18



## Targeting Tie2 promoter-yellow green luciferase transgene cassette to FosB chromosomal locus

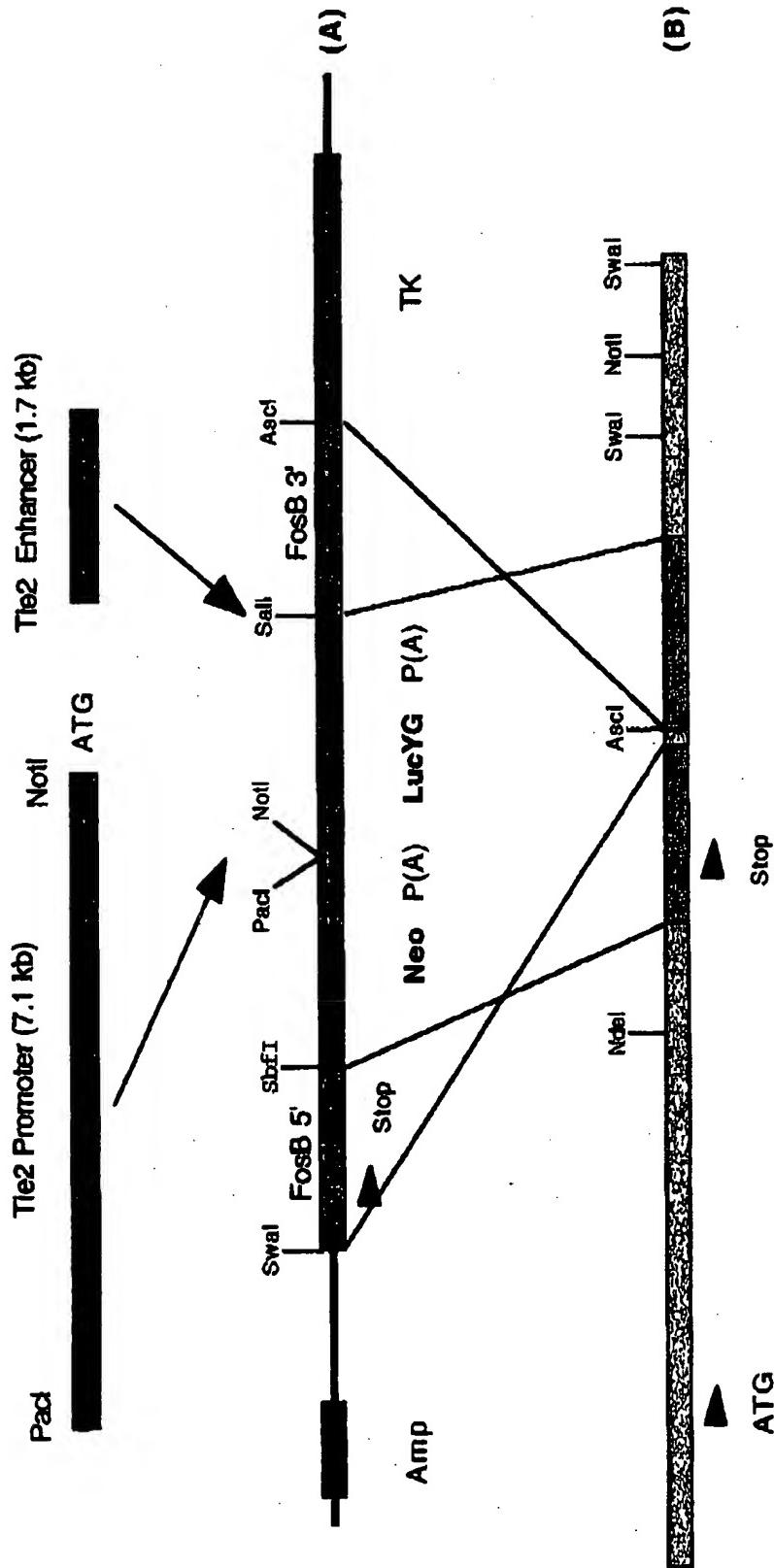
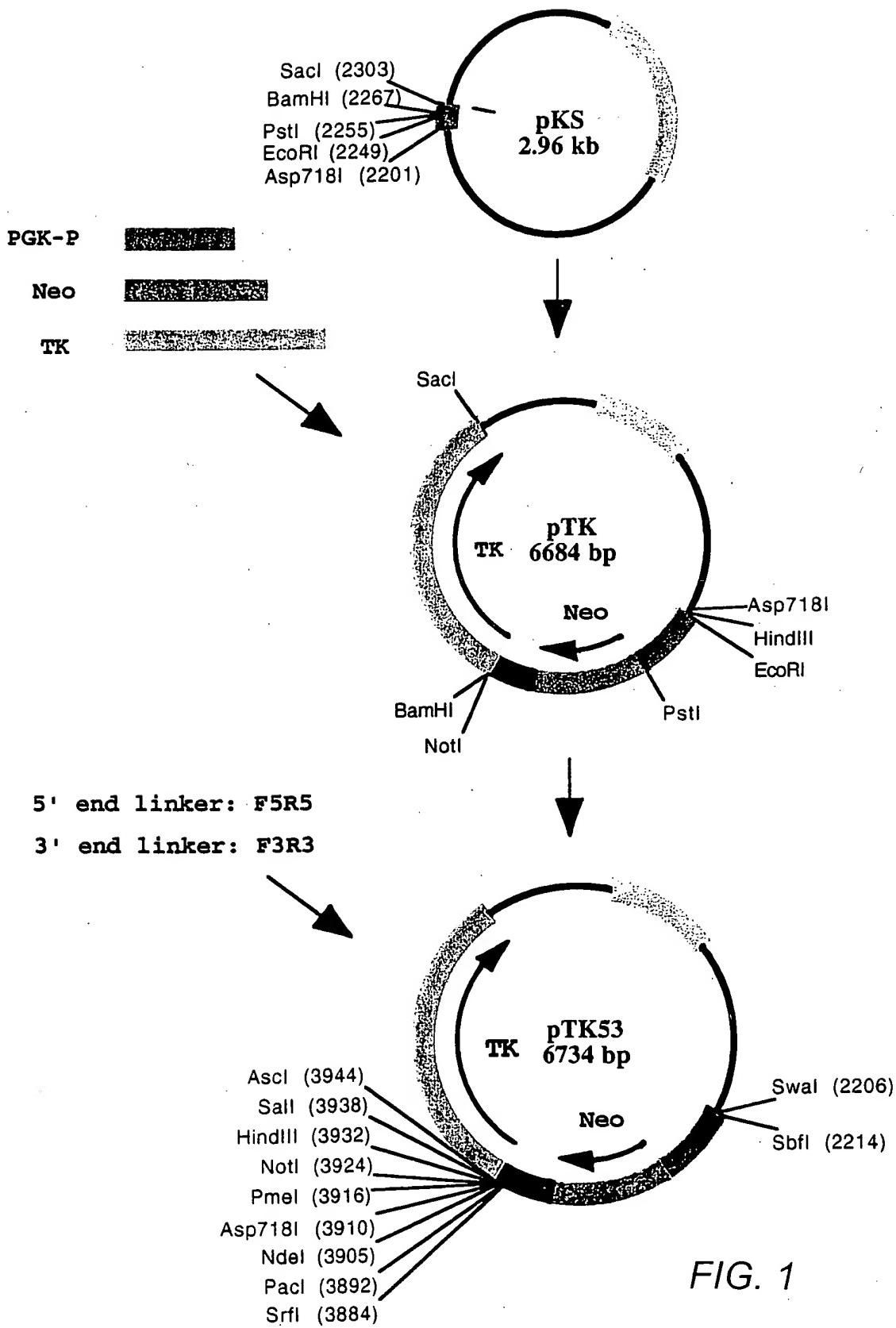


FIG. 19

A. Targeting vector pTKLG-Fos  
 B. Mouse FosB gene

Neo: Neomycin; TK: thymidine kinase; LucY<sub>G</sub>: yellow green luciferase from pGL3B (promega). Regions bearing FosB gene translational start and stop codons are indicated with arrows. The Tie2 will be cloned into the polylinkers between Neo and LucY<sub>G</sub>. Upon homologous recombination, the Neo-Tie2-LucY<sub>G</sub> transgene will be inserted into the FosB gene.



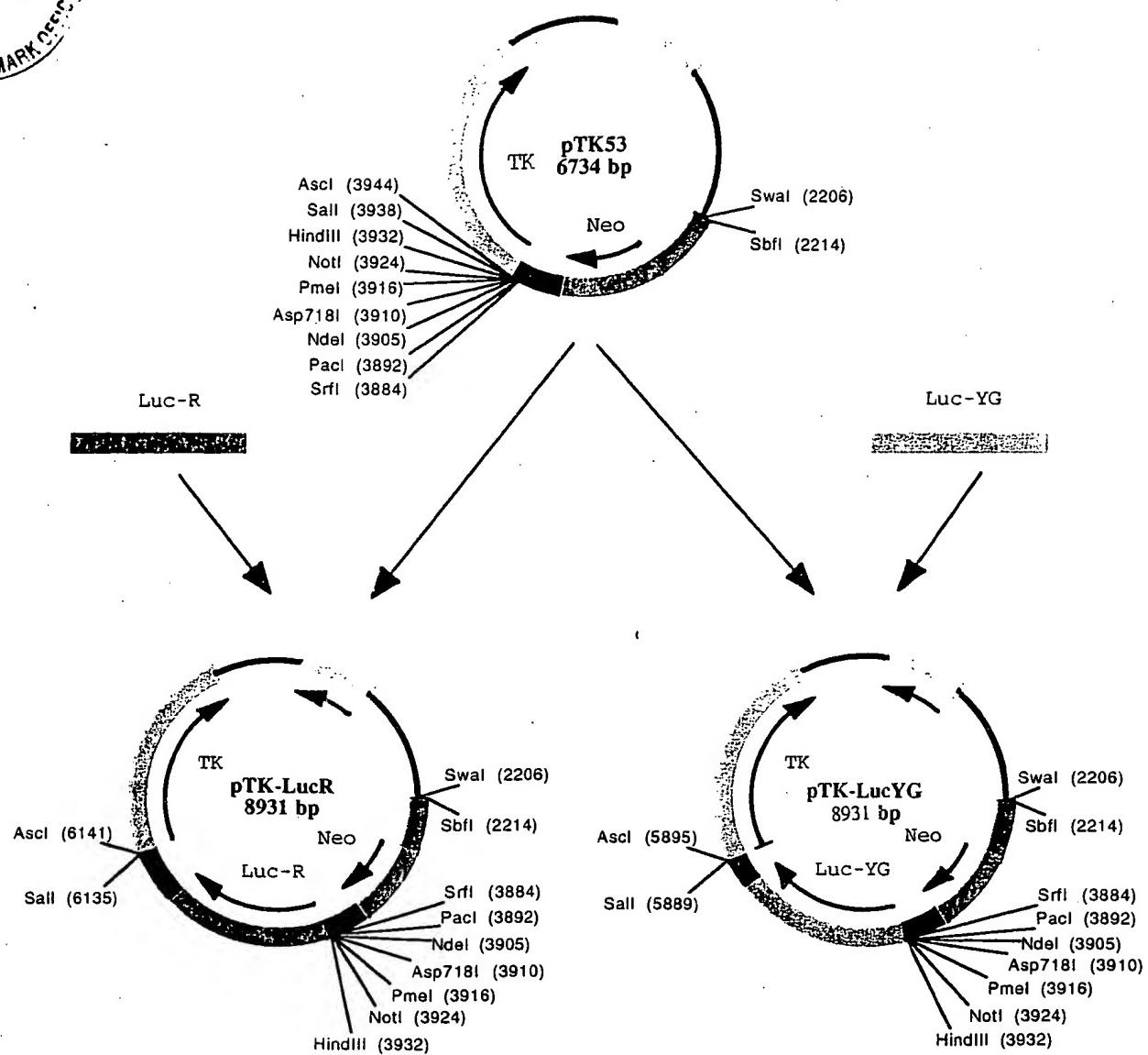


FIG. 2

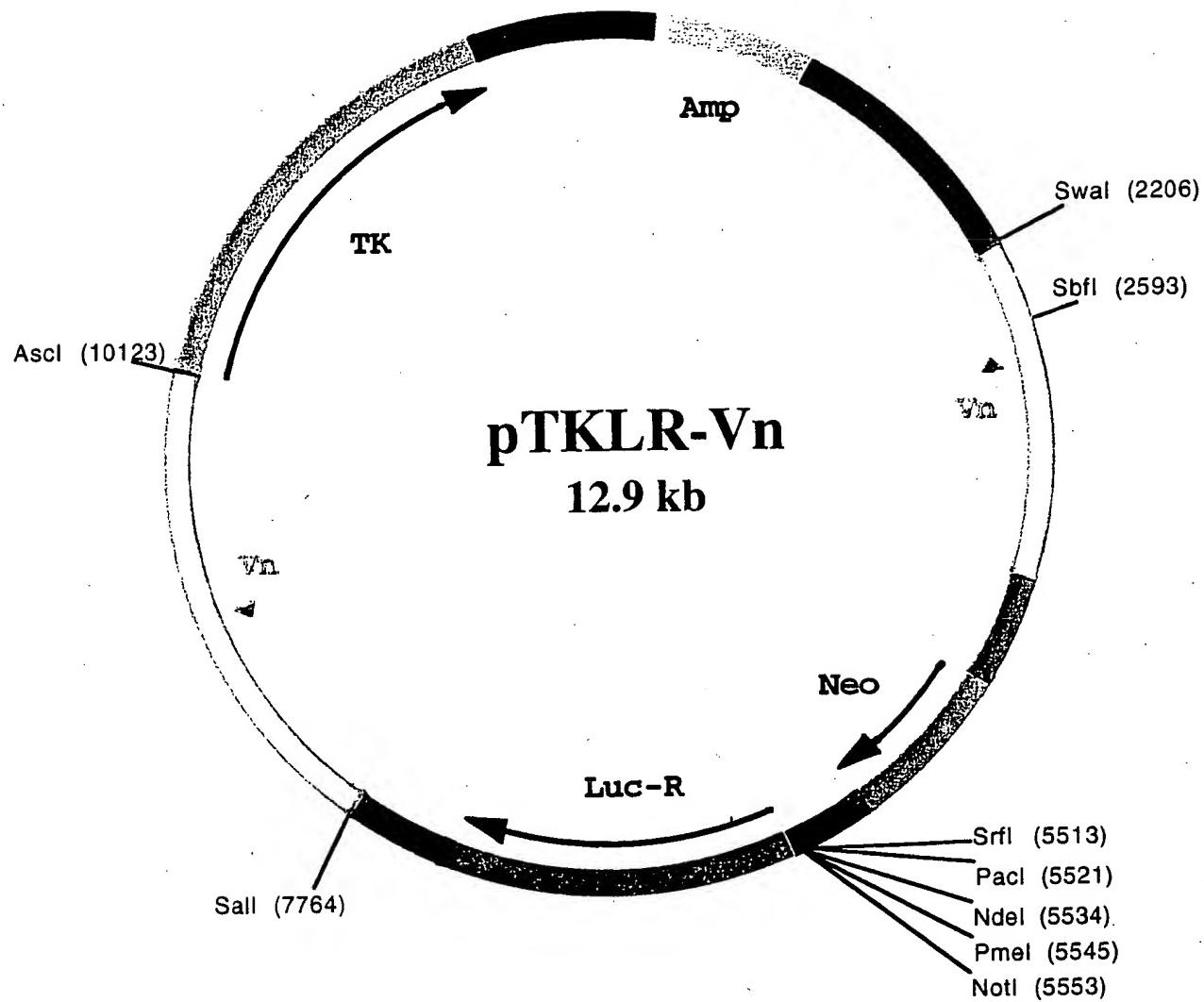


FIG. 3A

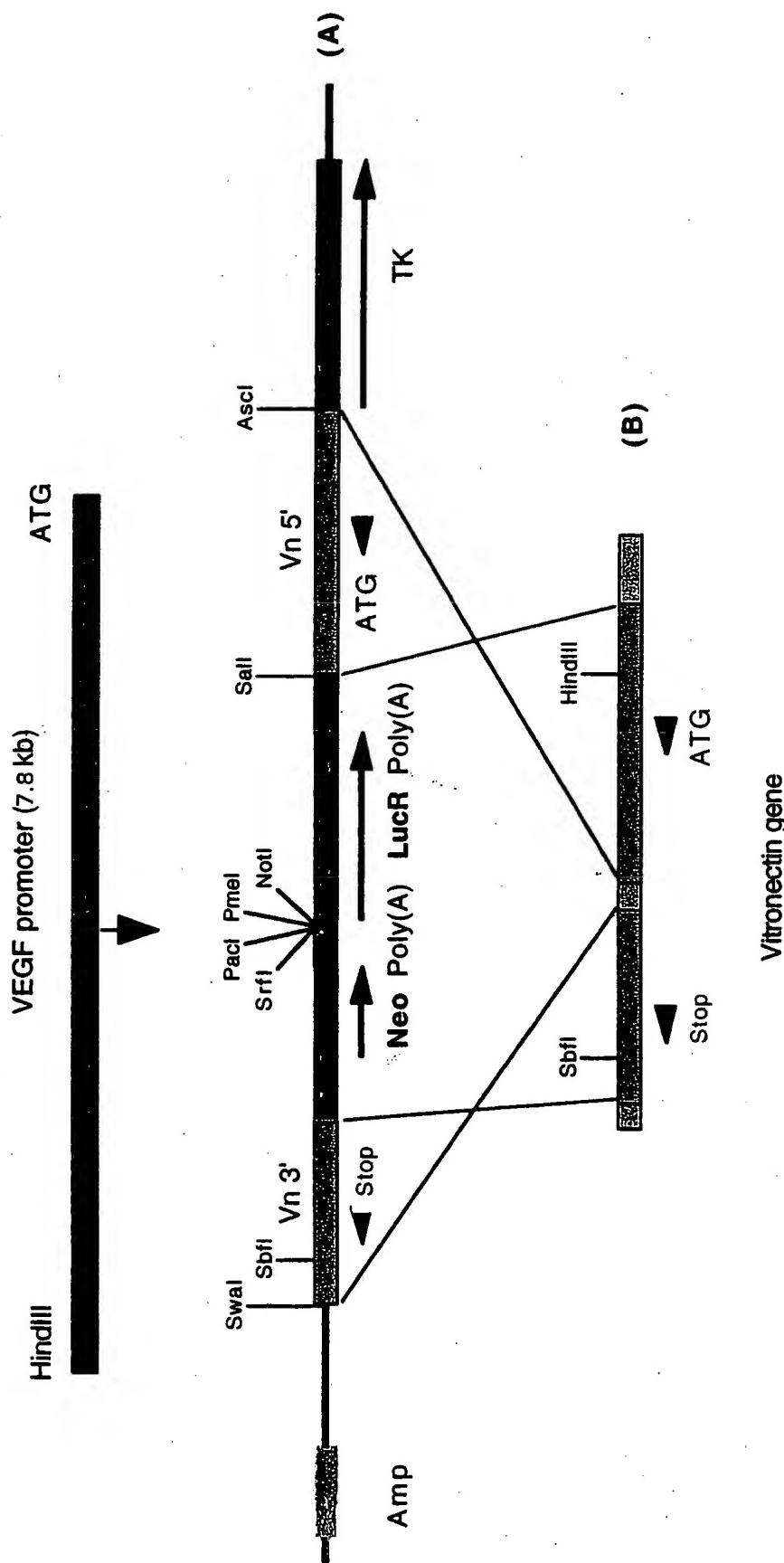


FIG. 3B



**FIG. 3C-1**

1001 TCTGAGAC GAGGGGT ATTACTG CCACTTG CCTTGGTT CTCAGCG GTCCTTC TCTATTAA TCTATGTC  
AGACCTTC OCTTCCAA TTACCGAC CTCTAAC CGAACTAA GAGGAGC ATGAAAT AGTGAAT AGTACAG  
1101 TATCTATA TCTGATC TATCTATA TCTCTTCT ACCTATAC CTCTATC ATCTATC CTCTCTA CTCTCTA TCTCTATA  
ATGAAAT AGTACAG ATGAAAT ATGAAAT ATGAAAT ATGAAAT ATGAAAT ATGAAAT ATGAAAT ATGAAAT  
1201 CCTATTCT TCTGTTG TTCTCTA AACAGCTT TAGCACTAC CTCTCTC TTCTCTC ACTCTAAC CTAATGCC CCTTAATC  
CTTAAATTA ACACAAAC AAAGAACT TTGCTGA AAGCTTG CCTCTAC CAACTCTC CAACTCTC AGACCTTA GAACTCTT  
GAACTCTT CCTCTCTG TTCTCTA CAACTCTC AGACCTTA GAACTCTT TTGCTAC ACCTCTCTG TTCTCTC GAACTCTT  
1301 ACACAGTCC ACTCTCTG CTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
TTCTCTG TTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
1401 CCTCTCTA  
CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
1501 AACCCCTAG CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
TTGGGAGTC CCTCTCTG GAGGAGAGG ACACATCC TTCTGGTC CAACCTAG GTTCTCTG GTTCTCTG GTTCTCTG GGGGTTTC AGTGTCTC  
1601 CAAGCTCTG CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
CTTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
1701 AACCCAGCT TCTCTCTT CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
TTCTCTG CCTCTCTA  
1801 AACCCAGCT AACGAGCT CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
TTCTCTG CCTCTCTA  
1901 ATCTGAGAG AGTCTGAA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA  
TAGCTCTC TAGCTCTT CCTCTCTC TTCTCTT ATCTCTT CCTCTCTC TTCTCTT CCTCTCTA CCTCTCTA CCTCTCTA CCTCTCTA

FIG. 3C-2





**FIG. 3C-3**

3001 AGTACUCC TGTCTCTT GACCTTC TTCTCCAG AACCTGAG TGCACAC TCTTGGAG GAAATAGG CTTCAGCC  
TGCGTTTC AGCAGTCA CTCAGAAGA CTCAGTAC AGCTTAC TGTGACTC AGCTCTG AGCTTC AGTACCTC AGTACCTC  
3101 CTTCTTACG CACCTGCA AGTACCTC AGCTTACG AGCTTACG CTCACATCC AGCTTACG AGCTTACG AGCTTACG  
CTTCAGCC GTCAGCTG AGTACCTC AGTACCTC AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
3201 GAAAGGCC CTCAGCTG AGTACCTC AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
CTTCAGCC GAGTCCAC AGTACCTC AGTACCTC AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
3301 AGCAGCTG AGAAGAGTC AGTACCTC AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
TGTCTCTG TCTTCTAG CTCAGGAG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
3401 AGGAGTCA TTCCAGAC AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
TTCCAGGT AGGCTCTG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
3501 CCTTAGCTTA CTCAGGAG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
CTATCAT AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
3601 CCTCTCTG CTCAGCTG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
CTCTCTG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
3701 CCTTTAGG TTCTCTG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
CTCTCTG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
3801 CCTCTCTG AGCTTACG TTCTCTG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
CTCTCTG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG  
3901 AGTGGCTG AGCTTACG AGCTTACG TTCTCTG ATTATTAT TTATGTT GTGATGAG AGTCTCTC AGCTTACG AGCTTACG AGCTTACG  
CTCTCTG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG AGCTTACG

FIG. 3C-4



4001 *tcacgtttt tttttttttt accctttttt accccatgg accctttttt atccatgg tcacatgtt tttttttttt gagttttttt*  
*accatggaa cacatggaa tcacatgtt acctttttt accccatgg accctttttt atccatgg tcacatgtt accatggaa ctgtttttt*

4101 *ccccgggtt cttttttttt ctgtttttt aaggctttt aaggctttt ccattttttt acctttttt tcacatgtt tcacatgtt*  
*ccatggaa cacatggaa tcacatgtt ttccatgg ttccatgg gttttttttt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

4201 *ccccccatc cccatggaa tcacatgtt tcacatgtt attttttt aaaaaaaat gactttttt ccattttttt tcacatgtt tcacatgtt*  
*tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

4301 *ttttttttt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*  
*ttttttttt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

4401 *ccatggaa tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*  
*tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

4501 *ccatggaa tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*  
*tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

4601 *tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*  
*tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

4701 *tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*  
*tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

4801 *tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*  
*tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

4901 *tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*  
*tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt tcacatgtt*

FIG. 3C-5



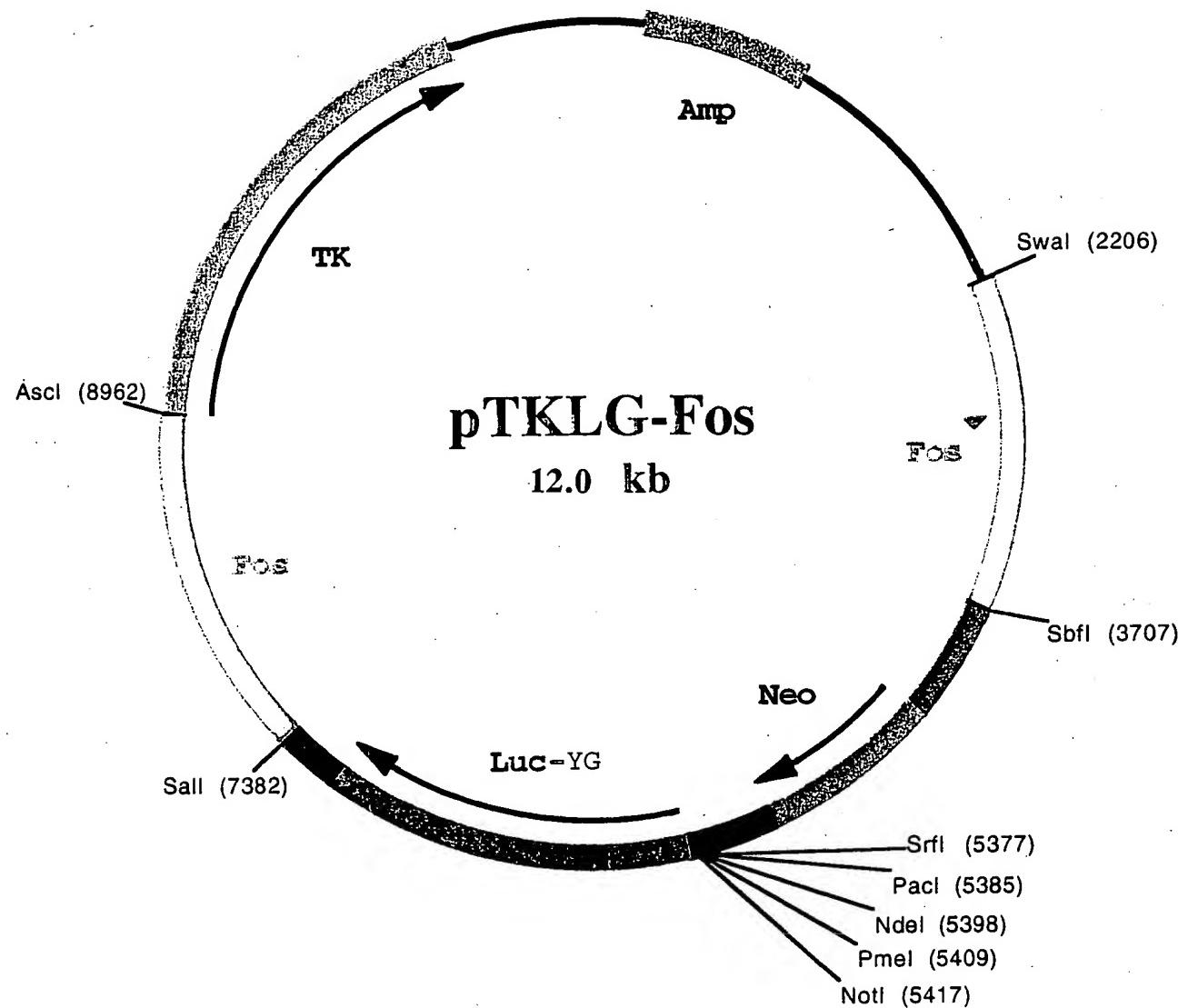


FIG. 4A

1 GCGCTGGG AACCTTGC GATGGGTC GWWGAT AGCGATG TGAAGAC GCGGAGC CGCCCGCT AACCTGC

CCTGGCCG TTGCGAGG CTGGCCAC GTTCAATA TGGCCCA AAGCTTG AGCTTC CGCGAGA TTGGCTG

101 TGGCGATG CCGGAAAGA AGGAAA AGTTGAGA GAGCTCA GCGCTTC GTCCTTA AGCTGCGA GCGGATC  
AGCGCTAT CCTCTTCTT TGTGTTTT TTAGGCTT CTGAGGT CTGGCGAG GCGGGAG AGGGTTT TGTGACTT CGGGATC

201 AGCTTCAAC CCGGAGT TGGCGCTG AGCGAGC AGCTGCTC AGCTTC CGCTTC AGCTTC AGCTTC GGGGGCG TGGCGAG  
TGGGGATG GAGCTCA AGCGCTG AGCGAGC TTGGGGAG TGGAGAG CGCGAGAG AGCTGCTG AGGGTTT TGTGACTT CGGGATC

301 GGATCCCT GCTGAGG AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC  
AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC  
AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC

401 GTCCTGGG GGGGGCG AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC  
AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC  
AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC AGCGAGC

501 TGGCTTG TGGCTTCC AGCTGGGG GTCGCCAGA GAGCTCTG GATCTTC GCGATGGG CGCGCTCA CGCCATTC CGCTGGCT  
AGCGAGAC ACCAGAGG AGCGAGG CGAGGCTT CGAGGTCT AGCTCTTC CTAGAGAG AGCTGAGC GCGAGCT  
AGCGAGCT AGCGAGCT AGCTGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT

601 TGTGGGAC TGGCTTCTG TCTAGCTA GAGCTTTC AGCTGTT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT  
AGCGAGCT AGCGAGCT AGCTGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT  
AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT AGCGAGT

701 AGCTGCTG GAGCTCTA CACTGAGC TTGGAGT TCTAGCT AGCTGAGT AGATGAGCTA GCGTAGGG AGCGAGAG  
TCTAGAGGA CTGGAGATG GTGAGTCAG AGCGAGCT AGCGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT  
AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT

801 CTGCGCTG TTGGAGCT CTGAGTCAG AGCGAGCT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT  
AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT  
AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT

901 GGGGGGGG AGCGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT  
AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT  
AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT AGCTGAGT

FIG. 4B-1





1001 TCCCTTTCG TCACTGG CTCGTAC TCTCTGG GAGCGCA CTGGAGG AGCTCTA CCTTAAC GAGGTTT  
AGGATTTT ATGCTTT GAGCTTG AGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
1101 AGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
1201 TCTCTGG GAGCTTCTT TTGGCTTA TCTCTGG AGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
AGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
1301 CCTCCCTT ACACCTGA GTCACCC CAGCTGTA TCTACGCC GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
1401 GTTGACAGA ATCTCTATT AACCTGG TCTGGCTTA GTCGGCTT GGGTTTC GCTTTC GAGCTTCTT GAGCTTCTT GAGCTTCTT  
CAACTGCTT TGGAGTA TGGAGCTT AGGGACAT CACCTCCA CCCCCAC CAAACCC ACCTTCTT TGGAGCTT GGGTTTC  
1501 TGGCTCTT CACGGTGC GTCCTCTT TCTCTGG GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT GAGCTTCTT  
ACACGAGTA GTCCTCTT GAGGAGT AGAGAGACG GAGACACA GAGCACA GAGCACA GAGCACA GAGCACA  
1601 GTAGGAGTCG GGGCTCTG GGGAACTCC CGCTCTTC GTCCTCTG TCTGGCTT CACCTGG CAGGCTTC AGGGCTCTT GAGCTTCTT  
CATCCCTGG CGGGAGACG CCCTTCTG GCGGAGAG CAGGTTCC AGGGCTCTG GGGCTCTG GGGAGAG TCTGGCTT GAGCTTCTT  
1701 CTCATCTT CCTGGCCA GTCCTGG CACCTCTG CCTCCACG TCTGGCTT GGGCTCTG GGGCTCTG AGGGCTCTG TCTGGCTT GAGCTTCTT  
GAGTGAGA GTCCTGG CACCTCTG CCTGGCCA GTCCTGG GGGCTCTG AGGGCTCTG TCTGGCTT GGGCTCTG AGGGCTCTG TCTGGCTT GAGCTTCTT  
1801 GGGCTCTG CTACCTCTT GGGCTCTG GGGCTCTG TGGCTCTG AGGGCTCTG GGGCTCTG AGGGCTCTG TCTGGCTT GGGCTCTG AGGGCTCTG  
GGGGCTCTT GGGCTCTG AGGGCTCTG TGGCTCTG AGGGCTCTG GGGCTCTG AGGGCTCTG TCTGGCTT GGGCTCTG AGGGCTCTG TCTGGCTT GAGCTTCTT  
1901 GGGCTCTG GGGCTCTG AGGGCTCTG TGGCTCTG AGGGCTCTG GGGCTCTG AGGGCTCTG TCTGGCTT GGGCTCTG AGGGCTCTG TCTGGCTT GAGCTTCTT

**FIG. 4B-2**

2001 TCCATGCA TGAAGATCCC ACCACGAT AACCGAGT AACCGAGG TCTTTTCA GACCTAAC CCACCTTC AGAGTGAA GCAGGAGGA CGAGAGTC  
ACGGTAGTA CTCTTAGGA TGTGCGTA TCGGTCAC ACCAAGCT CTCGACAG CGTGGAGG TCTTCAACT CCTGAACT CCTGCTCT CGTCTCAA  
2101 GAGGCCAGCC TGTGCTACTT ATGGATCA GTCCTACG CAAGATCA TTATTCAA AGTAAAGT TGCAGGAA ACCCCCTTC ACCCACTCC TTCTTCT  
CTCCTGTC ACACGATCA TAACTGCT GAACTCAA TACCTCACT CGAGTCTT CTGAGGTC AGGTGAA AGTCTGCA GTCAGGAGTA GGGTTATA  
2201 AAGTGACAT ATTTCGCA CTAACTGT GAGGTTCT AGGCTGATA GAGGTGAA GACTTAC AGCTGAGG TAAGGCGT CACTCTCT CCTCAATAT  
TTCACTGTC ACACGAGG AGTAACTT AGGCTGATA GAGGTGAA GACTTAC AGCTGAGG TAAGGCGT CACTCTCT CCTCAATAT  
2301 AAAAGGAAAG AGGCTGTC  
TTGGCTTC CAGGCTTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
2401 AGGCTGTC  
TTGGCTTC CAGGCTTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
2501 CTGGCTTC AGGCTGTC  
CTGGCTTC AGGCTGTC  
GACCCACA GAACTCCC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
2601 GACCCACA GAACTCCC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
CTGGCTTC AGGCTGTC  
GACCCACA ATATCCCT AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
GACCCACA ATATCCCT AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
2701 ATGTCACCT CCTGGCTTC TCTACCTA AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
TACAGTGGAA GGACGGAA AGAGCTGT AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
2801 CTGGCTTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
GACGGAGGA AAAAGGAA AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC AGGCTGTC  
2901 CCATCATCCT GACTGGCTT GACTGAACT TATTTGTC TAACTCACT CCTGCTCTC TACTCACT ATCTACAGT CTCAGGAGTA AGGCTGTC  
GGTAGTAGGA CTGACGAGA CGGCTTGC ATAAACAGG ATTCAGTAA GGACAGAGG ATGAACTGGA TAGAGTCAGT CTCAGGAGTA AGGCTGTC

FIG. 4B-3



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3001 CCCGCCACCA ACCCCACTTC TTCTCTTT TTTACTTCA GTCCACCCC CCACACAA AACCTCATCC CTCCCCCTTC AACCGAGGT GCGCTTC  
CCCGGGTGT TGGGTCAGA AAGGAGAA AAATTCAGT CACGTGGGG GGTGGTGT TGAAGTACG GACGGGAAC TTGGTCCA CGCGACT  
3101 CTCCCCGTC GGACCTCA GCAAGTGGT AACAGAACCT CATTAAAC AACACATAAG CTTTACCTAC TCACTCAAC AACCTGAGTC TTTTCCTTT  
GAGGGCAGC CCTCGACTT CCTCTACCA TTGTCTGGA TAATTTG TTGGTATTG TAATGGGTG ACTGAGTGT TTGACATTC AAAAGAA  
3201 TTCTCTCAA AAATTTTT CGTTGTTA TTATTTT CCTTATTT GGTGGTTT GAGTGAGTC TTGGCACCA CAGCACAT ACCAGCTAC AGGGAAATT  
AAGGAGGT TTAAATAA GCAACAAAT AAATAATAA CGAATACAA CTCACTCAAG ACCACGGGT GTGGTGTGA TCTCCAGT TCCCTAA  
3301 TCATAGTT TCCTCTT CGTGTGTC GTGCTGTG GCAACTCC TTCACTCACT GAGCTACAAT GCGCCCTCT GCGCTTAAAG CGAGACT  
AGTATCAAC AACAGAGCA GGCACACAC CCAGGAGGA CGGTAGAGG AAGTGGTCA CTGGATGTA CGGGGAAGA CGGGAACTC GTCCTGA  
3401 CCTTAGTACA GCGGACCT TTCTCGCC TCTCAAGT GAGATTCAA ATGTCACCA TCACACAGG CTGGAGTC TTCCCTACA GTGAGTCA  
GGATCATGT CCCTCTGA AGGGGGGG AGAGTTCA CTCTAACTT TACAGTGGT AGTGGTTC GAACTCAAG AACGGTAACT CACTGGT  
3501 CTCTCTCA GCTCTCTTC ACCATCTT TAGTGTGATG GGGAAAGGA GCGGGAGTA GCATGGTCA CCTCTAGGG AGGTGCT  
GAGGAGGT CGAGAGAGG TTGGTAGAA ATCAGACTAC CCTTGGT CGGTGCTAT CGTACAGAT GGTGTTAG GGAATTCCTT TCCAGGG  
3601 CAGTTGGAG GCACTCTTC AACCCCTAC ATCAGACCA AGATGTTG AGTGGGGT TGGGGGGT AACCTCTT GTCAGTCTT GTCAGTCT  
GTCAGCTC ATCTGAGG TGAGGGAC TACTGTGTG TCTTAACTC TCAACCCCA AACCTCTC TTGAGTA GTCAGCTC AACCTGTT  
3701 TTCTCTTC ATCTCTCTT ATCTGAGT ATCTGAGG TCTCTGAGA AACCTCTA AACCTGAGG AACCTCTG AACCTCTC TTCTCTCTT GTCAGTCT  
AGGGGGAG AGCAAGAA TACTGAGC AACGGGGCT AACCTCTT AACCTCTG TTCTCTCTT GTCAGTCTC AACCTCTC CCTCTGG  
3801 AGCTCCAA AACGGAGA GCGCTGGT TGTGCTGT GCGCTCA AACCTCTA CGGCTCA AACCTCTA CGGGGGAG GCGCTGG  
TGGGGTTT TCTCTCTT GCGCTCA AACGGGGAGA CGGGGGCTT GCGGGGGT TCTAGGCTT GCTCTCTC AACCTCTC AACCTCTC CGGGGGAG  
3901 CGGGGTGAGA GATTCAGG AGTCAGTC CGCTAGGA GCGCTGGT CGGGGGCTT GCGCTGGT AACCTCTC AACCTCTC AACCTCTC AACCTCTC  
GCTGGCTCT CGTACGTC CGGGGGCTG CGGGGGCTT GCGCTGGT AACCTCTC AACCTCTC AACCTCTC AACCTCTC AACCTCTC AACCTCTC

FIG. 4B-4



4001 CGAGACCCAC CCCCCCTG GGGGTCTT CTCTTACAC AGCTGAAT TCAAGGTC ACCAACCTT TCCCGCTTG TACACTTCT  
GCTCTGGTG GGGGTTGA CTGGGAGA GAGAATTC TCTCTTCA ATTCAGGG CCCCCCTA AGGGAAAGA ATGGGAAG  
4101 CCTTGTCTT CACCTGGG GGGGTCGG ATCTCCCG CCCCCCTC ACCAACCTT GGGGTCTT GGGGGTCTT  
CCACACCA GTGGAGGC CTGGAGCC ACCAACCTT GGGGTCTT CCTCTTCA AGGGAAAGA ATGGGAAG  
4201 TCCCTGTTAA ACTCTTGA CMCACAC KMCACAC CGAGGAGA AGGGAAAGA AGGGAAAGA GGGGGTCTT  
ACCAGCATTT TGGAAATCT TTGTTTTC TTGTTTGG GGGGTCTT  
4301 GTGGAAACCT TTGACTCTT CTGCTTAC AGCTCCCT TCTGCGATG GAGATGAGG AGGGGTCTT  
CACACCTAC AGGGAAAGA GGGGGTCTT  
4401 TCTTCCCG CGAGACCCAG GGGGGTCTT CTGGGGGG GGGGGTCTT AGGGGTCTT  
ACGGGGGG CCTCTCCCT CTGGGGGG GGGGGTCTT AGGGGTCTT  
4501 ACTCTTGGG ATAGATGCTT GGGGGTCTT GGGGGTCTT AGGGGTCTT  
TCTGAGCCC TATCTACCA CTCACCC CTCACCC CAGGTGGG GTGGAGACG GAGAATTC TGGGGTCTT  
4601 GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT  
CCACGCCCA CCCACCTCA GGGGGGGT GGGGGGGT GGGGGGGT  
4701 CCACCTCAA GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT  
GGGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT  
4801 GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT  
CTGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT  
4901 TGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT  
GGGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT  
AGTCAGAAGG GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT  
AGTCAGAAGG GGGGGGGT GGGGGGGT GGGGGGGT GGGGGGGT

FIG. 4B-5



5001 TATATACCTA TGTGCGTC ACCTCAAC CCACCCAG CGCCCTGC CTTTCTTTT GGTTCGGC AGCAGGGCCC CCTGGGCC  
ATAATAGAT ACAGGGAGAG TGGAGTGG GTCAGGTC CCGGGATTC GGGGAACCG GAGGGCAA CGGGGAAAGA CGAACCCCC CGACCTCG  
5101 CCAGCTCTCT CGAGGCTTT ATACTGAA TGTGCGTC GATTCGGC CTACCTT GGTTCGGC CTTTCTTTT GGTTCGGC AGCAGGGCCC CCTGGGCC  
GTTAGAACGA CCTGGCAA TGTGCGTC ATACCTT ATCAACCCG CTAAAGGCC CGCCCGTA CCTAACTTC GGTTCGGC GTTGAAA GGACCGAG  
5201 CCTGGCTCC ACTTCCTTC TGTGCGTC TGTGCGTC TGTGCGTC AGGAGAGG AGGAGGAA ATGTCCTC AATCTGAGT TGTGCGTC TGTGCGTC  
GGGAGAAGG TGTGCGTC AGGAGGAA ATGTCCTC AATCTGAGT TGTGCGTC TGTGCGTC TGTGCGTC AGGAGGAA AGGAGAGTC GGGGAG  
5301 TTTCTCTT AGTCCTTC TGTGCGTC AGGAGGAA ATGTCCTC AATCTGAGT TGTGCGTC TGTGCGTC AGGAGGAA AGGAGGAA AGGAGGAA  
AAAGAGAA TGTGCGTC AGGAGGAA ATGTCCTC AATCTGAGT TGTGCGTC TGTGCGTC AGGAGGAA AGGAGGAA AGGAGGAGTC GGGGCTCA  
5401 GAGTTTCA GGGTAAACG TTGACTTC TGTGCGTC TGTGCGTC AGGAGGAA AGGAGGAA AGGAGGAA AGGAGGAA AGGAGGAA AGGAGGAA  
CTTCAGAGT CGCGACTCG AAACGGGG GATAGGAGT ATAACTAG GGTGTTCA AAACCTGAT CGTATGATT CTCCCCGAC TGTGCGTC  
5501 ATCCCACTTC ATCCCACTTC TTGACTTC TGTGCGTC AGGAGGAT CGTGTGTC AGGAGGAA AGGAGGAA AGGAGGAA AGGAGGAA AGGAGGAA  
TAGGGTCAAG TAGGGTAAAG AGTAGGGT TTGACTTC GACAGGAG GAGGGCAA AGTGGCAC TGTGCGTC TGTGCGTC TGTGCGTC  
5601 ATATTCGG AGATGGCC TACGGCTT CGCGCTCT CGTGTGTC AGGAGGAA AGGAGGAA AGGAGGAA AGGAGGAA AGGAGGAA AGGAGGAA  
TTATAACCC TTGACTTC AGGGGGCA AGGGGGCA CGTACCTGT AGGATGGG AGCAGGACCG CGATCCAGG TTGGATGAGT GGTTCGGT  
5701 CGCCAGCTA TTGACTTC TGTGCGTC CGAGGAC TGTGCGTC TGTGCGTC TGTGCGTC TGTGCGTC TGTGCGTC TGTGCGTC  
GGCGGTGAT AAATGGAA AGGAGGAG GTTTCGGT ATATGATA ATACATATT ATTATATA TATGACTCA CGCCCGCA CGCCCGCA  
5801 GTGGCTCTCT AGGAGGTC GAGGCTCTT GTTTCAGT GTCAGTC GTCAGTC GTCAGTC GTCAGTC GTCAGTC GTCAGTC  
CACCGACCA CGACCGACCG CTGAGGAA CGAGGTCG CACGAGCT CAAGTTAG CGAAGACCC TAACTGAGT CTGAGACCC GAGGGAAA  
5901 TTGCTACTT TTGTTTC TGTGCGTC TGTGCGTC CGAGGAGTC CGGGCTCTC CCTTATCT TTGACTTC TGTGCGTC TGTGCGTC AGGAGGCTC  
AACAGTAA AACACACAC AGAGGGAGG AGACGAGA CCTCTCTAG GGGGGAGAG GAAATAGGA AAGAGTCAG AGGAGGAGG AGGAGGAG

FIG. 4B-6



6001 CAACATGCT CCACCTCAA TCACTCAT CTCGGTCTC TGTGTTATT CTGGATTGT CCGGAGCTG CAACTTACT TCTGAGAGA AGTGCTACT  
GTTGACAGA GTCAGAGCT ACTGAGACTA GAGCCAGAC AGACATTA GACCTANCA GCTAATGCA AGACATTCA TCAACTAC  
6101 GTGGTAGAT TTTACAT CTATCGT GAGAATCTC GTCGAATG TCTGATGAG AGAGGCTT GCGCTGGG AGCACAACTC ATTCAGCCA  
CCACCATCTA AAMATCTA GCTAGCA CTCTTAGAC CCACCTAC AGACTGTC TCTCCCGA CGTACGCC TGGTGTAAG TAACTGCT  
6201 TAGCCCTCAC CCACCTTA TTGGATT TTTCAATT GTTTTGT ATTGCACT TGACCCGG GCGCTGGG CAGCTATA CTCGGAGCT  
ATCGGAGTC GTCGAGCT AACACTAA AAAGTAAA CAAACA TAACCTGG ACTGGGGCC CCACGACCC GTCAAGATG GACCTCA  
6301 CCCTCCCC OCTGGCTT GCACGTCG CAAATAAG CTTTAAA ACTGATCT TCAAGTCAA GTGCTGTT TCCCTGACA TCAACTCAT  
GGGAGGGG GGACCUAGA CTGACAGGG GTTATTTG GAAATTGT TCACTAGGA AGTCAGTT CACAGACAA AGGACCTT AGTATGTA  
6401 GCCTTCCTT CAGAAUCC GAGTTGGT TCTTAGGAA GTCTTCCTG CACTAGGG GACCGTAA ACATAGAAC CTACACCG ACTAAAGA  
CCGAAGGAA GCTTTTGC CTCAACCTA AGGATCCTT CAGACACCC GTAACTCCT CTCGGATG CTAGCTTC GATGTTCCC TCAATTCT  
6501 AGTGGAGCT TCTAGTTT TCCATGTC CAGGGTGG CCACCTT GAAAATAA GGGGGAA AGTGAAGT ACCAATTG CTGAGGTC  
TCACCTCTGA ACCATCCAA AGGTACAG GTCCGACCC GCGGGTGA CTTTTATT CCCCCCTT TCACATCCA TGTTCAC CACTCCAC  
6601 TGGGAGATT TCACTATGG AAAGAATT ATTACACCTC GTCGCACT GAACTTCAG CAACGTTA GGGGAGGT GAAAGCTC GCGACATT  
ACCTCTAA AGTACTAACCC TTTCTAA TAAGTGAAC CCACGTTA CTGAAAGTC GTGTCATT CCCGTCCTA CATTGCACT CGCTGTA  
6701 GTAATCTTA GCAATTGAGA GTGGAGCA AGGGATCA CTGGGAGT TCACTCAT GTGGATGTA GATACCAACG CCAAGCTT ACTAAGCA  
CATTAGAT CGTAACCTT CCACCTGGT TCCCTAGTT GACCACTCA AGTCACAGTA CACCTAGAT CTATGGTGC CTTCCTAGA CGTACCTT  
6801 GACCCCTGG TACACCAGG GACCGAGAG TTGGGGTG AGCTGGTGG AGCTGGTGG AGCCCAACTC GAGAGTGGAGA GTAGCTCA CGCAGATTCT AGCGGAGT  
CTCCCTAACC ATGGGTCCTC CTGGCTCTC AACCCACAC TCCCTACCC TCCGTTAC CTCACCT CTCTCACTT CAATGGAGT CGCTCTAC  
6901 ATCCAGAGTT CAGACCTCC CTTGAGAG AGCTAGAGCC CGCAGCTT TTGAGGAGA GAAGTTAGA GTAGGTGT CTCTCTAC CGCTCTAC  
TACGTCTCAA GTCTGGAGG GAACCTTG TCACTCTC GCGCTCCA AACCTGTC CTCCAACTT CAATCCACCA GAGACATG AGTACGTC

FIG. 4B-7



7001 CTGAGGAGGA CGCTGAGGT TCAAGAAGG ATCGAGATC GAAACAGG GAGAAGGG ATCGAAGGG CATGGAGG GCGAGACACA TTCTCTCT  
GACTCTCT GCGACTCCA AGTCTTCC TACCTCTTC CTTCGTC CTCCTCTC TAGTTCTCC GTACCCCTC CGCTTGTT AGAACAGA  
7101 TTAAGGAA CGCTGGAAAG GATCTCTTC TCAAGGAA GATGCTAAC AGTCTCTTC TCTAGGGT TCTGGAA GAGACGCT TCTCTCTC  
ATCTCTT CGACCTTC CTATTGAAAG AGCTCTCT AGCTCTCT CTAGGAGG TGAGGAAAC AGTCTCTCA AGAACCTT CTCCTCTA AACAGTCC  
7201 CTGGTCTCC CCATCTCC TCTTCATA CCTTCCTTC CATTAGT GTGCTCAAG CGCACCTTC TAGGACTTC TGTGAGGG AGCTCTCTC  
GACCGAGG GTTAAAGGG AGAACACCT AGCTCTCTG GAAATCTCA CACAGAGTC CGCTGGAGG AGTCTGAGG AGTCTCTCC AACAGTCC  
7301 CTGAGTCA TTAAGGAC ATTCCTCT AGCTCTCTC TCTGCTGG CTGAGTAC TCAAGGAC AGGCTTAC AGGCTTAC AGGCTTAC AGGCTTAC  
GAGCTCTG ATTTTCTG TCAAGGAC AGGCTTAC AGGCTTAC AGGCTTAC AGGCTTAC AGGCTTAC AGGCTTAC AGGCTTAC AGGCTTAC  
7401 CCATCTCTC TCAAGGAC AGCTCTCT AGCTCTCTG GAACTATCA ACAAATCA CTATATCC ATGGGATT AACATATA AACATATA AACATATA  
GGTAACTGAGG AGCTCTCTC TCTGCTCA CTGACCTCA CTGTTACT TGTTTACT GATTTAC TACCTCTA TTATGTTT TTCTCTA  
GACTGGATCA GCAATCTT TAGGAGAA CGGAGATC CTAGAATT GGAGCTAT TTATCTT CTGAGTCA GATTTAGG GAACTCTC GAAATCTC  
CTGACCTACT CCTTACAA ATTCCTCT CTCGCTCTAG GATCTAAA CCTTGATTA ATTTAGGA GAACTCTC GAAACCCAC CTTAACAC  
7501 GGAGGAAA ATGTTAT AGTAAAGAG ATAATGAG AATAGGGT GCTCAGAA GCTTACCT AGCTCTCTG CTTTGAGG GAAATCTC  
CTTACCTT TTACATTA TACTCTCTC TTATTAATC TTATCCAC CGAGCTCT CCTTGATTA ATTTAGGA GAACTCTC GAAACCCAC CTTAACAC  
7601 GAGGAGAA ATGTTAT AGTAAAGAG ATAATGAG AATAGGGT GCTCAGAA GCTTACCT AGCTCTCTG CTTTGAGG GAAATCTC  
CTTACCTT TTACATTA TACTCTCTC TTATTAATC TTATCCAC CGAGCTCT CCTTGATTA ATTTAGGA GAACTCTC GAAACCCAC CTTAACAC  
7701 TGCAGGAG CAATGGAA TAGATCTCC CGCGGAAAG GTGGAATCA ACCACTCT CCTTGATTA CGAGCTCTT GAGGCTCA CGGAGACCA  
AACGCTCTC GTTACCT ATCTATGAGG CGGGCTTC CACCTACT TGGGAGAA GCGATTTTC GATTCCTAA CTGAGCTCT GGGGTGTT  
7801 CTGAGGAG CAATGGAA AGGCTATT TCGAGTTAGT TATAAAGG CGAGCTCA CACCTTTA CACTTACT CATTATTTG GGTATACAGT  
GACTCTCT AGCCCTT TCTCGATAA AGTCATCA ATATTTCC GCTCTCTG GATGAAAT GCAATCAA GAAATCAA CCATATGCA  
7901 AGATATAA TTCAATGGT TTGACATTT TTTTCACTT AACATCTT TCTCTCTA AGTCTCTT GAACTCTT ACTAATCAA  
CTTATTAAT AACGTTACCA AGCTGTAA AAAAAGTGA AAAGACAC TCTCTCTA AGGCTCTT TCAAGGAA CTACTGAGA TGATGATT

FIG. 4B-8





8001 **M**AATGAGTC CTCCTTTC TTAACGTTT GATTTCGG AGCCAGGCC TAAAGTCGT GTCCTCCAA CTAAACAG AATTTTTC AGTCAA  
TTCATTCAAC GAACTAAAC TATCCTCAA CGTAACCC TTGGCGGG ATTCAAGGA CAGGGATT GATTGTC TTAAACCC TTTCACCTT  
8101 **G**TCACTTTA TTTCGTTG TTCTTCTT TTGTGTTT TATGGAAA ACTTCCTACG CCCCTTC GAGGAGAT TGAGCTTT CTGCAAGCGA  
CAGCAAT AACACAAAC AACAAAGA AACACAA AACACAA  
8201 **C**ACCAAGC TTGCTTGG AGTGAGCA CGGGCGCA GAGGACCC TCCCTCTT TTAGTACT GCAAGCTT AGGAACTA CTCAGTGCCT  
CTTGCTTC AGACATCC AGACTGGT GGGGGGT CTGCTTGG AGCTAACCA AACACAA  
8301 **A**GGCTTGA GTGACACCC AACCTCCCT GAGTTAGC CCTAAACCC ATCCCTTT ATATTAAT GATTGACA CGGAACTA GGCTAGACA  
TCCACTACT CACTGTGG TGGGGAA CTCAATCTG CGTTTGG TACGAA AAATTCCTA CTAACTCT AGCTTGTGTT CGAGCTGT  
8401 **T**CTATATAC CACAGGGAG TTCTGTAC CTCACTCC AGGAAATC AACCTACG TTGTGTTT ATATGTC GCGAGGGC AGTCCCTA  
ACCATTATG GTGCGCTC AGACATCC AGACATCC AGTCAAGG TCCCTTAC TTGAGTC AACACAA AACACAA TATAGAAC CGGTCCCC  
8501 **T**TGGCAGG TGCCTTAT AGGAACTT TACTCTTA GAGAGTC TACTGGAG CGGGTTT GAGTAGTA TCTCAAGC TCCCGTGT  
AACTGCTC AGCGAAATA TCCCTCCAC AACGAACTT CTCTCAC AGTGAACCTC CCTCACAA CTCCATGCAT AGAGTCAG AGGCTCA  
8601 **G**ATGCTGGT GTCCTCAA CGGGCTC TTCTCTTC CTCGATCA AGGTGAGA CTCAGCTC CTCTCAGC ACCAGTCCTG CGCTTAT  
CTAGGACCA CAGAGCTT AGGAGGAG AGGAGGAG GAGCTAGT TOCACATCTT GAGAGTCAG GAGAGGTGG TGTACAGAC GGCGATA  
8701 **G**CTTGCTC TTCCATGAC GATTAAGC TTGGCTTG AACCTGAAG TCAAGCCCG AGTACAGT TTCTTAT AGAGTCCTA TATATATAG  
CGAAAGGAG AACGTTCTG CTATTACTG ACACGGAGC TTGACATC AGTGGGGGG TCAAGTCA AACGAAATA TTCTCACT ATATATATAC  
8801 **T**ATGATATA TTGATGATA TATGATATA TATATATAA CGGGCTCA CTCTTACT CGCTTCCC TGAATTCAG TATGGCG  
ATACATATAT ATCTACATAT ATACATACAT ATATATATAT ATATATATT GTGGAGGT GAGAACTA AACGAAATA TTCTCACT ATATATATAC  
8901 **A**GGTTCTT GAACTTGA GCACTTCC TGCTCAGCC TCCATGTT ATGAGCTA TCAAGTCA CGGGCTT AACGTTAGT ATGACTTATA  
TCTTACGGA CTGAACTT CGTAGAGG AGGGAGTGG AGGTGAGCA TATGCTGT ACTCTCTT GTGGCTAA TTGAGATAC TACTGATAT

FIG. 4B-9

019  
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U.S. GOVERNMENT  
1901 AGAGACAGA AATCAGACT TCTTAACT AGTCACAGA TCCATCAT CTACCTGT TCCCTATA AACGCTTA CCGACACCT CTGGACTGC  
TCTTCGCT TTAGCTCA AGGAATGA TCAAGTGT ACCGAGTA GATGGAGCA ACCGAGAT TCTGCGT GGGTGGAG GACCTGACG  
9101 TTTCAGGT CCTCCAGGT CTCAAGCCA CACTCTCTT TCTTAACT CTTCACCTG CTGACTTC ACCCGCTT CCTGTTGGCC CAAGCTCT  
MACTCTTA CGACGCGA GGTGCGCT GTGGAGCA ACCATTCGA GAGTCGGAC CAACGAGG GGGGTTCA GTGACCGG GTTGAGAG  
9201 CTCCTGTC TCAATCCA CTACCTGA ACCCTGCC ACCTACCG GTTAAATT TAGAAGGG TCACTTCCTC OCTGCGACAG ACAACCAAC  
CTGGACAG AGTTAACT GTGGCTAT TCCAGGCC TCACTGCC CAATTATA ATCTTTCG AGTAAAGG GGAGGGTC TGTGGTTG  
9301 CACCATATGC TGTCACTTA CTACCTGA ATGAGCTA ATGAGCTT TCAACTT TCCTGAGC TCACTGC CACCTGATA ATGACTG  
CTGCTATCG AACGAGTAT GATGAGCA TCTCTCAT TACCTGAT TACCTGAGA AGTGTGAA AGAGACTGG AGTCAAGG GGGGGGTAT TAGTGACT  
9401 GACACAGAT TCCTAGGCC TGTGTTTC CTCAAGCCA GTCCTGGAC CCTTAAAC ATTCTCAT GTGGCTCA COCCACCC ACCATTAAT  
CTGCTCTTA AGGAGTGG AGCCAGG GGTAGGAT CACGGCTG GAAATTAG TAAGGATA CAACCACT GGGGGTC TGGTTTTA  
9501 TATTCCATT GATCTTAAT MCTGATT TTTCATG TTAATAG TATGTAAC ATTGTGTT CCTGTCAT TTAGTGACCT GACCTGCA  
ATTAAGTTA CTGAGTA TGTCTTA AAAGTAC ATACTATC ATACATGG TAAACCAA GGTCACTG AACCTACGG GACCTCT  
9601 GTCATCCAC CCACAGGC TCCACAC MGTAGAA TCCGGCAT AGGGGATCA GAGGACAT GATTAACAC TGGGGCGAC TTTCGCTG  
CAGTAAGTC CGTTCGCC AGGAGTGT TCAATTCTT AGGACGTA TCCCTAGT GTGGGTTA CCTAATGAG ACCGAGCTG AACCCAC  
9701 CCTCTGCA CCCTTGAG CTAGACAG CTACATCAT TCTGAATT TGTGTTGT GTGGGTTGT GTGGGTTGT CCTCTGCA  
GAAGACCT CCCTGCTC GATCTGTC GATGAGTT AGACCTTA AACACACCA CACACACA AACACACA CGGAGCTAG  
9801 CCTCTGCA ATGAGCTG GCTTAGTG TCCGGACC CATTACAC CGACATC CCTCACG ATCTGAT GATGAGCTA TCTCTATA  
CCACGACTC TACCGCTCA CGAAATCAC AGGAGCTG GTATGAGC GTCTGAGG GGGAGTCG TACGAACTA CACTGAT ACAGAGAT  
9901 GTCCTGCA CTAGACAG AACGAGAC TAATTTA AGTAGACT GATGAGGA TCAATTG CGAGTGA AGTGGCTG GATTCGA  
CACCCACG GTATGTC TGGACTG TGTGACTG ATTAAATT TCACTTGA GTGGACCTT AGTAAATT CCTGAACT TCAACAC CTAACAGATT

FIG. 4B-10

10001 TAACTTATA ACATAACCA GAGAGAGGC CCTTGCTT TCAAACTT ATTCCTCA GTCAGGCG ACCGGCGC CAGAGCTG GAGTGGCG  
 ATTGATTAT TTATTTGGT CTCTCTCG GGGGCCAGA AGTTGAA TAAAGGAT CATGCCCC TCCCTCACCC CTCACCC  
 10101 GTTACGGAGC AGGTGGGG GAGGTAG GGAATTCC GGATCCATT TGAAGGTA ATGAGAAA TTTTAAATA AAATTGAA AAAATGTA  
 CTCCCTCG TOCCACCCC CTCCATATC CCTGAGG CCTATGAA ACTTACATT TACTCTTT ATGATTAT TAAACTT TTTCAAT  
 10201 CCCAGCTT GGTGAGCT CACTACCA ACCAGCTTC CAGTACTC TCTGAGTC TCCATTCG TCCCTCG AGCTCTTC ACCAGTAAAG ACCGGAGC CACGCTT  
 GGGCTAAC CGACCTAGA GTGATGGT TGTCTAAC GTCAGTC ACCAGCTTC AGCTCTTC AGCTCTTC AGACCTTC  
 10301 AAGTAGTC TCTCTCCA TCTGTGGT TCCAGGTT GAATGGT CTCAGCTT GCACTTA GGTGCTCC AGACCTTC  
 TTCATCTAG AGAAGAGT AGACACCA AGTCCCTAA AGTCCCTAA CTGACCA GTGTCGAA CGACCTCA CTAATGAT CCACAGGG TCTGGAG  
 CCAACTAT CAATCTGA CGTGAAGTC GCACTGTA GATGAGCA TGTCTAAC ATCTCTCA ATGATATGA TATCAGGC  
 10401 GTTTGATTA GTAGAGCT GCACTCAG CCTGACTTC GCACTGTA GATGAGCA TGTCTAAC ATCTCTCA ATGATATGA TATCAGGC  
 10501 CAAAGTGA GATGGCTAG TCCAGAC CACAGCTC TCTCTAAC GTCAGGTT CAATCTAG CTCACCA GTCAGTCA TCCCTCA  
 GTTCACTACT CTACGGAGTC ACCCTCTC GTCAGGAG AGAGGTT CACCTCTCA GTTCAAGT GTCAGGTT TACATACAT ATAGTCTCG  
 10601 TGAATGCTT GAAGCTCT ACCTGCTT TCAATAT AATAATAA ATCTAAAA AAAAAACG ACCGGCTT GTCAGGAGT CCTTAACT  
 ACCTTACAGA CTCTGAGA TCTACATCA ATGATATAA TTATTTTT TAGATTTT TTTCAGG TCAACCA CCACCCCTG CGAAATTAG  
 10701 CCAGGACTT GAGGGAGC GCAACCTT TCTCTAGC GACCCAC TCTCTAGC AGCTGTTG AGCTGTTG AGACACCA GAGAACCT  
 GTCAGGAGC CCTGGCTC CGTCCCTA AGCACTAG CTCCCTGG AGCACTTC TCTCTAGC TCTCTAGC TCTCTAGC  
 10801 GTCGAGAA MAMAGAGA GAGGGAGC TGAGGCCA ATCTCTAA CTTCTCTG GTCAGGAGT GTCAGGAGC GAGAACCT  
 CGACCTT TTTTCTCT CTCTCCCTC ACTCTGGT TATGAGTT GAGACAC GAGACAGT GAGCTGAT TCTGAGTGT CTCTGG  
 10901 TCTCTGAA GTAGGGAGT MCTCTCT TATAGAGT ATCTCTG CTCTCTT CTCTCTT TATGGAGT AGGAGAC CGACACCT  
 AGGAGCTT CCATCTCA TGTGAGA ATCTCTCA TACGAGAC GAGACAA AGGAGAC TCTCTCTG GTCAGGAG

FIG. 4B-11





11001 TGCAGGCA CCTTACCTT TTAACCTGA GCGATACCC AGCTTGAC TGGGATTG TAGGCCAGG TTCCTTAACT GACCCACCT CGCCACCCCC  
ACCGTTGTT CGGTCTACA ATCTGACT CGGTATGG TCGAACCTG ACCCGCTAAG ATCCGTTGCC AACGTTCTA CTCGGTGA GGGGTTGGG  
11101 AACCCCTCT CGAACTTCTT AGCCTTCC ATACCTACC TTGACCTT TAAGAGGTC TTAACGAC TAACTT  
TACGGAGCA CCTCTAAGA TCGCTCAGG TATGGATGG AACCTGAA ATTCCTGCCAG AACGATCTG AGCTAA

**FIG. 4B-12**

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10            20            30            40            50            60            70            80            90            100  
AGCCTTGCAGGGAGGTAGGAGGGAGCCCTGCGCTTGATCAATGCCCTTATCCTGGATGAGTCGGTACCGAGTCAAAACCTGAGCTGA  
TTCGAACGTTCCCATCCTCCCTGGACACCGCAACTAAGTTACGGACGGATAGGAGCCTACTTAGCCAGTCAGTGTCAACTCGAACT

110            120            130            140            150            160            170            180            190            200  
AGGTCTTGGGTGCTTAACATCTATTACAAATCTTATTTAGCAACTTAGAACACTGTCGAATAATGGAAAGCTACTTAAACCTCTAACTCCCTCC  
TCCAGAACCCACGAATGCTAGATAAAATGTTAGAATAATCGTTGAATCTTGACACTTATAACCTTTCGATGAAATTGGAGATTGGAGGAGG

210            220            230            240            250            260            270            280            290            300  
ACACTATGAGAATGTTACATTCTTCTATTCAAGTTTGTGAGCAGTAACAGATGAATCAGGAATATGCCATCACATCACAGTGCTCTAAATGAC  
TGTGATACTCTACAATGTAAGATAACTCGTCATTGTCTACTTAGTCCTTATACCGGTAGCTGTAATTCACGGAGATTACCTG

310            320            330            340            350            360            370            380            390            400  
TGCTTGTTATTCAATTACAGTGTGGCCCTTGACTTCATCGGCACCTCCTAGCACAAACAAATCCGCAGATGGAGCTGGAGAGATGGCTCAGCTG  
ACCGAACATAAGTAATGTCACACCCCCGAACTGAAGTACCCCTGGAGGATCCTTGTGTTAGGCCGCTAACCTCGACCTCTACCGAGTCGACA

410            420            430            440            450            460            470            480            490            500  
TAAGAATACTTATCCCTACACAGCCCTGGAGCCAGTTCCAGCACACGGTGGCTCACAAACCATCTGTAACCTCCAGTTCTAGGAGACCCGACTCCC  
ATTCTTATGAAATAGGGATGTCGGGACCTCGTCACACGGTCTGGGTGTCACCGGAGGTGTTGGTUGACATTGGGTCAAGATCCTCTGGGCTGAGGG

FIG. 5A

**FIG. 5B**

O P E  
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R&TRADEMARK

1010      1020      1030      1040      1050      1060      1070      1080      1090      1100  
TGCGCTGTGAGACGGCCCACTCTGGGTGCTCGGAACCAACTCGGGTCTCTGGAAAGACAGGGACCCATAATGCAGAGGTATCTCAGACTCTACT  
ACCGACACTCTGCCGGTACACCACGGAGCCTTCTGTCCTCGTGGTATTACGTCTCCATAGAGACTCTGAGATGA  
AATTTAACTTAATAGAAAAAAATTCAAGGTCAATTGATATCCTTCATGTACCCATATATCTAGGGCATGGTCTAGAAGGAACGTC  
1110      1120      1130      1140      1150      1160      1170      1180      1190      1200  
TTAAATTCAATTATCTTTTTTTAAAGTCCAAGTAACATAGTACATEGGAAAGTACATGCTGAGCTTCTCCAGTACCAAGATTCTTCTTGCAG  
1210      1220      1230      1240      1250      1260      1270      1280      1290      1300  
GTACCCACAACCTGGTCTGCTCACATAAAGAATGGAAGTCATTAACACTCATCACACTGTAAGTGAATTGAACTCTGACAGAGAAGTGA  
CATCGTGTGAAACCAGACCAACTGTTACCTTCTGACTAATTGAGTACTGAGACTGCTCTGTTGGTTCACT  
1310      1320      1330      1340      1350      1360      1370      1380      1390      1400  
GTCTGACTCCAGGTAACTGAGCCCTCTCTCTCTAAAGACACAGCATAACAGAGTAAATAACTGGGCATGGTGAAGGAACAAACGCAGG  
CAGACTGAAGGTCCATRACTCGGAAGAACAGGAGGATTCTGCTGTCGGTATGCTCATTTATTGAACCCGTACCACTTCTCTTGTGGTCC  
1410      1420      1430      1440      1450      1460      1470      1480      1490      1500  
AGGGCTAGCCAACTCTGAGCTGGTAGCTGCTGGTTATAACGGAGCCACCTGCCCAGGAGGTAGTCACATGCTCTGCTAAACAGAAACTTAAG  
TCCCGATCGGTCAAGACTCTCAGCACTCACAGGCCAATAATTGCTCGGGTGAACGGTGCCTCCATCAGTGTACCGAGACGATTTGCTTGAATC

FIG. 5C

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1510      1520      1530      1540      1550      1560      1570      1580      1590      1600  
AAACACTTACCGAAGCAACATGGGAAGTGCCATGCCAACATGACTGACTGGCAATGACCCAAACCGCAGCCACTAGAAAGGAAGGT  
TTTGTGAATGTGCTTCGTTGTACCCCTTCACGGTACGTTCGTACACTGACTGACCACCGTACTGGCTTGGTCGTTGGATCTTCCCA  
  
1610      1620      1630      1640      1650      1660      1670      1680      1690      1700  
AGTGGGCCACACTGTACTTGTGAAATGAACTTATTCAATTATTGAAAACGCTGAGAACCAAAGTGTCTTCCCACCTACCTTGGGGAGG  
TCACCGGTGTGACATCACACTTTACTTGAAATAAAACTTTGACATTCCTCGTTCTACAGAACGAGGTGGATGGAACGGGTCC  
  
1710      1720      1730      1740      1750      1760      1770      1780      1790      1800  
CGAGCACTTCTGGAATTATAAAGTGGATTTCTGGAACTTCATAACATTCTACTCTCATCTATGTCCTGTCAAATAGAGAATGCTCTG  
GCTCGTGAAGGACCTTAATATTACGGCTAGAAAGACCCCTGAAGAGTATGTAAAGGATGACGAGTACAGACACAGTTATCTTACGAGAAC  
  
1810      1820      1830      1840      1850      1860      1870      1880      1890      1900  
AAACAGTGTGTGTGTGTGTGCGCGCACGGCACTCACTCCCTGCTCTGTGAGGCCAGTTTGATGGTCCCCAGAGTTATTTGAGTAT  
TTGTTCAC  
  
1910      1920      1930      1940      1950      1960      1970      1980      1990      2000  
CATTTCTCAAGAGCTTCAGCTGGAGACACTGCCTCTTACTGGCTGAAGGTCACTAGCTGATTCACTCCGTTGGCTGGGATCCCTC  
GTAAGAGTCTCGAAGTCGACCCCTCTGTGACGGAGATGACGGACTCCAGTGAAGGCAACCGGACGGGAAACCCGGGGGAAACCCCTAGAG

FIG. 5D